

Springfield Natural Resource Study Report



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1.0 INTRODUCTION

This report is a significant step in Springfield's efforts to update its land use planning and regulatory programs to comply with Statewide Planning Goals and federal wetland and riparian management requirements. It is designed to complete two remaining periodic review tasks which is also required for state planning compliance. A principal theme underlying Springfield's Goal 5 planning is that conflicts between natural resource protection and urban development can be reduced to the extent that 1) conflicts are identified and analyzed in advance, and 2) flexibility is exercised to resolve those conflicts within a framework of clear and objective development standards.

The "standard process" identified in the Oregon Administrative Rules (OAR) section 660-023 allows communities to identify conflicts between development and locally significant resource sites and to propose balanced solutions to those conflicts. The process requires an analysis of the Environmental, Social, Economic and Energy (ESEE) consequences of allowing development to impact natural resource sites and leads communities to make one of three decisions: 1) fully allow development; 2) prohibit any development; or 3) limit development, making decisions about the protection of resource sites based on the assessed consequences. Development in this instance means any land use that might conflict the healthy function of a resource site.

This report fleshes out the ESEE analysis and program for protecting Springfield's was prepared to meet state planning mandates with several specific objectives in mind:

- (1) To analyze wetlands and riparian areas that have been identified as "significant" for Goal 5 planning purposes for the ESEE consequences of allowing conflicting land uses to impact these resource areas.
- (2) To determine "impact areas" outside of wetland and riparian boundaries, where development impacts may be reduced through buffers or other means. Impact areas form an important part of the ESEE analysis as prescribed by OAR 660-023-040 (3)
- (3) To identify future land uses and development activity that are likely to conflict with the health and function of Springfield's wetland and riparian resource sites. This is done primarily by reviewing uses allowed by zoning, and by identifying public facilities and transportation projects that are likely to go through wetland and riparian resource sites or their impact areas. (OAR 660-023-040 (2))
- (4) To determine the probable impacts of development on significant wetland and riparian resource sites - and *vice versa*. Goal 5 requires a determination of the environmental, social, economic, and energy consequences of developing, not developing, or partially developing each wetland or riparian resource site. Goal 5 also requires that the impacts of protecting the wetland resource site - especially on affected property owners - also be considered. (OAR 660-023-40 (4))
- (5) To provide the Planning Commission and City Council the information needed to evaluate the ESEE consequences of wetland and riparian resource protection so that they can make

informed policy decisions concerning the appropriate level of protection that should be afforded to resource sites in the Springfield UGB.

(6) To recommend a program for protecting wetland and riparian resources that achieves a balance with needed development using low impact development practices to minimize the harm to resource sites. (OAR 660-023-040 (5))

(7) To recommend a protection program that is consistent with and supports the existing protection placed on streams and some wetlands by Springfield's Stormwater Quality Management Program.

(8) To establish protections for wetland and riparian areas that are fair and reasonable, and which minimize the City's exposure to Measure 37 claims.

The final and primary objective of this report is to comply with Statewide Planning Goal 5 with respect to wetland resource sites. Although City of Springfield has some discretion in resource protection, the City must exercise this discretion consistent with Goal 5 and OAR 660-23-000. This report, therefore, is designed to meet LCDC Goal 5 legal standards and to minimize the City's exposure to legal challenges in the future.

As noted above, this report provides the factual and analytical basis necessary for effective citizen and property owner involvement, and for the Planning Commission and City Council decision-making process. The wetland resource functions and values of the wetlands have been determined using the Oregon Freshwater Wetland Assessment Methodology (OFWAM), and Wildlife Habitat Assessment (WHA) protocols consistent with applicable state administrative rules. The OFWAM assessment was conducted by an approved consultant and acknowledged by the Oregon Division of State Lands (DSL), under a grant from that agency. The WHA was administered by a consultant under a program funded by the Oregon Department of Land Conservation and Development.

This report provides an analysis of the economic, social and energy consequences of completely protecting the resource, allowing development to proceed without restriction, or allowing development to proceed on a limited basis. It is up to the Planning Commission to recommend, and the City Council to decide, what weight should be given to economic, social and energy factors relative to environmental factors. At one extreme, the City may decide that a wetland or riparian resource site is so important that it should be preserved at any cost. At the other end of the spectrum, the City may decide that the costs of protecting the resource are so high, that the resource site should not be protected and the resource site remove from the resource from the City's inventory of locally significant wetlands or riparian sites.

This report tries to avoid these extremes in two ways. First, sites that were determined through the OFWAM analysis to have relatively low resource value (i.e., non-locally significant wetlands) are not recommended for further consideration in this ESEE analysis. There is no need for the Planning Commission and City Council to devote time in evaluating the consequences of preserving or not preserving the resource, if the resource is relatively insignificant in the first place. This is true also for the riparian sites which were evaluated using the Wildlife Habitat

Assessment (WHA) tool and found to be of low value. It is important to note however, that wetlands and riparian sites that are not deemed significant by local assessment require review by DSL and or the US Army Corps of Engineers, and the City is required by law to notify these agencies of the existence of such non-inventoried resource sites and any proposals that might impact them.

Second, resource sites usually can be partially preserved without severe economic, social or energy consequences. For example, through zoning techniques such as residential density transfer, most resource sites can be at least partially protected without severe economic hardship to the landowner or developer. In some cases, however, locally significant wetlands and riparian areas cannot be protected, even on a limited basis, without severe economic or social consequences. (See site-specific resource recommendations found in Section 9.0). For this reason, the “standard process” as described in OAR 660-23 is used here to try to balance property owner rights, the desire to build efficiently within the existing UGB with the need to preserve the functions and values provided by wetland and riparian areas.

2.0 PLANNING AND REGULATORY FRAMEWORK

2.1 Regulatory Context

There are a variety of federal, state and local policies that recognize the value and need for habitat protection and watershed planning and management. These policies are the foundation for current and future resource protection efforts in Springfield. This section describes applicable policies that relate to the protection of fish and wildlife habitat.

Federal Policy

Endangered Species Act (ESA)

The National Marine Fisheries Service (NMFS) listed the Upper Willamette Spring Chinook salmon among 12 salmonid evolutionarily significant units (ESUs) in the Columbia River Basin under the ESA (Federal Register/Vol. 64, No. 24, 1999). Spring Chinook migrate through the metropolitan area in the McKenzie and Willamette Rivers and their tributaries as adults and juveniles. Others spawn and/or rear in metropolitan area streams.

A number of other federally listed fish and wildlife endangered species and species of concern may also be found in the greater Springfield area. These include as listed species: the Oregon Chub, Bull trout, Bald eagle, Northern spotted owl and Fender's butterfly; species of concern: Townsend's big-eared bat, Pacific pallid bat, Northwestern pond turtle, Oregon vesper sparrow, Purple martin, and Northern red-legged frog.

The ESA listings elevate the importance of protecting and restoring riparian corridors and wetland areas because the many of the listed species are dependent on healthy riparian corridors during their lifecycles. Additionally, riparian corridor protection and restoration are important because once protective regulations are issued by the federal government, NMFS requires that all parties must avoid killing or harming a listed species, and avoid adversely modifying the habitat that supports listed species.

Federally Listed Species in the Springfield Area

Animals/Insects	Status
Oregon Chub	Endangered
Fender's Butterfly	Endangered
Upper Willamette Spring Chinook	Threatened
Bull Trout	Threatened
Northern Spotted Owl	Threatened
Bald Eagle	Threatened, Proposed for Delisting
Townsend's big-eared bat	Sensitive-Peripheral
Northwestern pond turtle	Species of Concern
Oregon vesper sparrow	Species of Concern
Purple martin	Species of Concern
Northern red-legged frog	Species of Concern
Pacific pallid bat	Species of Concern

Plants	Status
Bradshaw's lomatium	Endangered
Willamette Valley daisy	Endangered
Kincaid's lupine	Threatened
Wayside aster	Species of Concern
Shaggy horkelia	Species of Concern
Thin-leaved peavine	Species of Concern

Source: Oregon Natural Heritage Program database, May 2004

Clean Water Act (CWA)

The Clean Water Act (CWA) is the 1977 amendment to the Federal Water Pollution Control Act of 1972. The goal of the CWA is to maintain and restore the physical, chemical and biological integrity of water in the United States. The CWA prohibits discharges of pollutants into waters of the United States, unless the discharge is in compliance with a National Discharge Elimination System (NPDES) permit. In Oregon, the CWA is implemented by DEQ with review and approval by the U.S. Environmental Protection Agency (EPA).

Section 303(d) of the Clean Water Act

Surface water quality is addressed in the CWA. Section 303(d)(1) and (2) of the CWA requires each state to identify those waters that do not meet water quality standards. The State is also required to submit to the EPA reports which “establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.” These reports describe the following: 1) water quality status of rivers and streams, including water quality limited streams, 2) a list of water quality limited streams still requiring total maximum daily loads (TMDL), and 3) a ranking of these streams according to severity of pollution.

The Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Act) was originally passed in 1976. This Act provided the NMFS legislative authority for fisheries regulation in the United States in the area between three miles and 200 miles offshore, and established the eight regional fishery councils that manage the harvest of fish and shellfish in these waters. In 1996, the Act was reauthorized and changed extensively by amendments in the Sustainable Fisheries Act (SFA).

These amendments emphasize the importance of habitat protection and strengthen the ability of NMFS to protect “Essential Fish Habitat,” which is broadly defined as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.” Portions of “Essential Fish Habitat” may lie in urban areas, which are often important habitat for salmon, such as areas with low gradients, that contain wetlands, floodplains or are along major rivers, tributary junctions and estuaries.

State Policy

Statewide Planning Goal 5

Statewide Planning Goal 5 addresses natural resources, scenic and historic areas, and open spaces. The legal requirements to meet Goal 5 are embodied in Oregon Administrative Rule 660, Division 23 – the “Goal 5 rule.” It prescribes a process for local governments to follow for inventorying and evaluating Goal 5 resources and for developing land use programs to conserve and protect significant Goal 5 resources. The rule requires communities to inventory and evaluate regional Goal 5 resources, including but not limited to, riparian corridors, wetlands or open space areas. See Section E of this chapter for a complete discussion of Goal 5.

The Oregon Forest Practices Act

The Oregon Forest Practices Act (OFPA) was enacted in 1972 and significant changes were made in 1994. The OFPA administrative rules regulate forestry activities and were developed to protect forest-related resource values, including waters of the State. The OFPA includes water protection rules for riparian management areas (629-635-000). The overall goal of the water protection rules is to provide resource protection during operations adjacent to and within streams, lakes, and wetlands and to provide riparian management areas so that, while continuing to grow and harvest trees, the protection goals for fish, wildlife and water quality are met.

Oregon Endangered Species Rules

It is the State of Oregon’s policy “to maintain all species of wildlife at optimum levels and prevent the serious depletion of any indigenous species” [ORS 496.012 (1)]. The Oregon Endangered Species Rules (OAR 635-100 to 635-100-130) help carry out this policy. In accordance with these rules, species can be classified as “threatened” or “endangered” and steps can be taken to recover them. To carry out the policy expressed in this rule, and for other reasons – biological, ethical and economic - a “sensitive” species classification was created under Oregon’s Sensitive Species Rules (OAR 635-100-040) to help prevent species from qualifying for listing as “threatened” or “endangered” (ODFW 1992).

Oregon Sensitive Species Rules

Sensitive species constitute those naturally reproducing native animals that may become threatened or endangered in all or a significant portion of their range. Factors to consider in listing species as sensitive are the same as those in the Endangered Species Rules. The Oregon Department of Fish and Wildlife (ODFW) maintains a list of sensitive species that is updated biennially. The list of sensitive species serves as an early warning system for land managers and the public.

State Listed Species in the Springfield Area

Animals/Insects	Status
Oregon Chub	Sensitive-critical
Bull Trout	Sensitive-critical
Northern Spotted Owl	Threatened
Bald Eagle	Threatened
Townsend’s big-eared bat	Sensitive-critical

Northwestern pond turtle	Sensitive-critical
Painted turtle	Sensitive-critical
Oregon vesper sparrow	Sensitive-critical
Purple martin	Sensitive-critical
Northern red-legged frog	Sensitive-vulnerable
Pacific pallid bat	Sensitive-vulnerable
Clouded salamander	Sensitive-vulnerable
Plants	Status
Bradshaw's lomatium	Endangered
Willamette Valley daisy	Endangered
Wayside aster	Threatened
Kincaid's lupine	Threatened
Tall bugbane	Sensitive-critical
Shaggy horkelia	Sensitive-critical

Source: Oregon Natural Heritage Program database, May 2004

Oregon Plan for Salmon and Watersheds

The mission of the Oregon Plan for Salmon and Watersheds is “to restore our native fish populations– and the aquatic systems that support them – to productive and sustainable levels that will provide substantial environmental, cultural and economic benefits.” It was initiated in 1995 to address restoration of coastal coho salmon. In April 1997, the Oregon Legislature incorporated other related efforts into one overarching framework: “The Oregon Plan.” It is designed to restore the healthy function of Oregon’s natural aquatic systems. It represents commitments on behalf of government, interest groups and private citizens from all sectors of the State. There are four fundamental approaches used by the Plan to accomplish the goal of securing and protecting healthy fish habitat: 1) community-based action; 2) government coordination; 3) monitoring and accountability; and 4) improvements over time.

The *Willamette Restoration Initiative (WRI)*, founded in October 1998, is one of many responses to the Oregon Plan’s call for action. The WRI is a broad-based effort to promote, integrate and coordinate efforts to protect and restore the health of the Willamette watershed. A major task of the Initiative is to help guide the development of the “Willamette Chapter” of the *Oregon Plan for Salmon and Watersheds*.

Oregon Wetland Regulatory Program

The Oregon Division of State Lands (DSL) administers Oregon’s removal/fill law (ORS 196.800- 196.990). Using similar definitions as the federal government, DSL determines wetland boundaries and waterbodies that meet the definition of “waters of the state.” A permit is required for fill equal to or exceeding 50 cubic yards or more of material in any waters of the State at one location. Likewise, a permit is required for removal of more than 50 cubic yards of material in any waters of the state in any calendar year. Waters of the state means natural waterways including all tidal and nontidal bays, intermittent and constantly flowing streams, lakes, wetlands, and other bodies of navigable and non-navigable water.

Oregon Division of State Lands Essential Salmonid Stream Designation

In an effort to identify and protect essential habitat for salmon and trout, the Oregon Legislature in 1993 required the DSL to identify essential salmon habitat in waterways across the state and to adopt administrative rules that require a permit for all alteration activities in these areas. A major focus of designating essential habitat areas was to identify those waterways with significant biological value and the greatest risk to declining stocks. Criteria used to identify essential habitat were areas that provide habitat for multiple species, areas of concentrated spawning, “source basins,” and other spawning and rearing habitat at risk. The new DSL rules require applicants to demonstrate that their proposed alterations will have no unacceptable adverse effect on listed salmon species.

Local and Regional Planning

Eugene-Springfield Metropolitan Area General Plan

The Eugene-Springfield Metropolitan Area General Plan (Metro Plan) is the official long range general plan (public policy document) of metropolitan Lane County and the cities of Eugene and Springfield. The Plan sets forth general planning and land use allocations and serves as the basis for coordinated development of programs concerning the use and conservation of physical resources, furtherance of assets, and development or redevelopment of the metropolitan area.

The Environmental Resources Element of the Metro Plan addresses the natural assets and hazards in the metropolitan area. The policies of this element emphasize reducing urban impacts on wetlands throughout the area and planning for natural assets and constraints on undeveloped lands on the urban fringe. It provides broad direction for maintaining and improving our natural urban environment. Other elements dealing in more detail with particular aspects of the natural environment include Parks and Recreation Facilities and Environmental Design (scenic). The emphasis in this element is the protection of waterways as valuable and irreplaceable component of the overall natural resource system important to the metropolitan area. Waterways are also the subject of Section D, “Willamette River Greenway, River Corridors and Waterways.” While some repetition is unavoidable, that section emphasizes the intrinsic value of waterways for enjoyment and active and passive use by area residents.

The Metro Plan is a framework within which refinement plans and functional plans offer additional detail. These supplemental plans are subject to the guiding policy provided by the Metro Plan document. The Eugene-Springfield Public Facilities and Services Plan (PFSP) was adopted in 2001 as refinement plan of the Metro Plan. It recommended changes to the Metro Plan that relate to the provision of water, stormwater and electrical services. The PFSP modified the Public Facilities and Services Element of the Metro Plan to include policies requiring a more environmentally sensitive approach to the design and construction of basic urban infrastructure.

The PFSP responded to policy directions driven the federal policies mentioned above including Title IV of the Clean Water Act, the Endangered Species Act, and the Safe Drinking Water Act. The PFSP also addresses issues embodied in Statewide Planning Goal 5: Natural Resources,

Scenic and Historic Areas, and Open Spaces, Goal 6: Air, Water and Land Resources and Quality and Goal 15: Willamette River Greenway.

Completion of the Goal 5 natural resources planning includes the development of an inventory of significant resource sites that is to be included in the Metro Plan. Goal 5 also requires local jurisdictions to develop program policies for protecting local resource sites that may include amendments to policies found in the Environmental Resources Element and possibly other elements of the Plan.

2.2 Natural Resource Planning History in Eugene-Springfield

Early Planning and “Old Goal 5”

The history of addressing natural resource issues in the Eugene-Springfield metropolitan region predates the Statewide Planning Program. Eugene, Springfield, Lane County and other agencies have cooperated in addressing environmental issues—whether it was establishing local controls over air pollution, protecting life and property from flood hazards, creating a park system along the Willamette River Greenway, acquiring large regional and metropolitan-scale open spaces, developing trails and paths along waterways and ridgelines, or protecting scenic resources in the hills overlooking our cities.

Local governments have been planning for Goal 5 in the Eugene-Springfield metropolitan area since the late 1970s. It has happened in bits and pieces, sometimes as a metropolitan study, sometimes as a local effort by one or two of the three metropolitan jurisdictions. Sometimes, the study focused on a specific site, such as Goodpasture Island Heronry. Other times, the study focused on a given resource within a jurisdiction, such as the Springfield Local Wetlands Inventory. Still other times, the study focused on a given resource within a certain area of a jurisdiction, such as the West Eugene Wetland Plan. Environmental planning is an ongoing process that responds to new information, new laws, and local issues. Those pressures for additional environmental planning efforts can be expected to continue. The best example in recent times is the emphasis on wetlands and riparian areas as well as water resources and water quality.

The requirements for Goal 5 have changed several times since Oregon adopted its Statewide Planning Program in 1973. Local Goal 5 work falls within different Goal 5 requirements that were in effect at the time the various studies were conducted. The early Goal 5 work was a part of developing the first Metropolitan Plan (Metro Plan) that the Department of Land Conservation and Development acknowledged in 1982 as in compliance with all the Statewide Planning Goals, including Goal 5. Much of this early Goal 5 compliance work occurred before the Land Conservation and Development Commission adopted the first Goal 5 administrative rule in 1981. The 1978 series of “Natural Assets and Constraints” working papers addressed a broad array of LCDC environmental goals, including Goal 5.

Later Goal 5 work happened as part of a locally initiated Mid-Period Review and met the requirements of the 1981 Goal 5 Rule, including more detailed analysis on four sites inside the urban growth boundary (UGB)—Willow Creek, Bertelsen Slough, Spencer Butte Ridgetop, and

Gillespie Butte. Also under the 1981 Goal 5 Rule was a previous metropolitan study of wetlands, riparian areas, and upland wildlife habitat that began as part of a Metro Plan Update.

Local governments initiated a study, the Natural Resources Special Study (NRSS), as part of a Metro Plan update in 1987. Processing of the plan amendments that were proposed as a result of the NRSS reached an impasse because the three jurisdictions could not reach agreement on certain issues. The draft Natural Resources Functional Plan, prepared in 1991 as a refinement to the Metro Plan, was not adopted by all three jurisdictions and therefore has no official status.

Planning Since “New Goal 5”

After putting the NRSS on hold in 1996 pending adoption of new Goal 5 rules by the state, the elected officials directed staff in the spring of 1997 to proceed with updating the previous inventory. Direction was given to staff by local elected officials to: (1) address the natural resource sites inside the UGB in greater detail than the "safe harbor" approach allowed by the new Goal 5 administrative rule, and (2) apply the “safe harbor” approach on lands outside the UGB but inside the Metro Plan boundary. The safe harbor approach provides communities with a pre-approved methodology for satisfying the statewide planning requirements for natural resources under Goal 5, and relies heavily on existing data.

Staff conducted initial briefings with the appointed and elected officials in June 2000 concerning a renewed effort to complete and adopt a Goal 5 natural resource inventory. The Natural Resources Study (NR Study), as the new effort was called, proposed to use much of the work that was completed for the NRSS. Staff proposed to use an updated version of the inventory and criteria used for the NRSS as a basis for establishing the inventory and significance criteria required under the new Goal 5 rules.

The Eugene, Springfield and Lane County Planning Commissions held joint work sessions and public comment sessions on the NR Study and its draft inventory and significance criteria between March and May of 2001. The planning commissions met separately to continue discussion and to forward a recommendation concerning the significance criteria and inventory to their respective elected officials. Eugene and Lane County Planning Commissions met in September and October of 2001 respectively, and forwarded unanimous recommendations to use the NR Study draft inventory and significance criteria for the remaining steps of the Goal 5 process. The Springfield Planning Commission met in October and recommended changes in the significance criteria that altered the inventory.

Independent Completion of the Goal 5 Process

The Cities of Springfield and Eugene and the Board of County Commissioners met separately over the Fall and Winter of 2001-2002 to provide direction on using the significance criteria and the resulting inventory in the remaining steps of the NR Study. The Eugene City Council directed staff to move forward with the study without any modifications to the significance criteria. The Springfield City Council met on December 10, 2001, and suggested changes to four of the significance criteria. The Council reconsidered the December action in March 2002 and approved minor modifications recommended by staff to four criteria. The Lane County Board of

Commissioners supported the revisions to the criteria that Springfield City Council recommended on December 10, 2001.

As an outcome of the actions taken by the various jurisdictions to approve somewhat different significance criteria, each decided to pursue completion of the Goal 5 process independently. Eugene, Springfield and Lane County will continue coordinating on policy amendments to the Metro Plan that may be necessary to comply with Goal 5 rules.

Safe Harbor for Uplands, Standard Process for Riparian Corridors

The City of Springfield adopted the Springfield Inventory of Natural Resource Sites on May 3, 2004. In adopting the Inventory, the City Council chose to apply the safe harbor provisions of OAR 660-23-110 to the protection of upland wildlife habitat. The Council chose to apply the standard process to riparian corridors on the Inventory. The significance criteria and resulting inventory are described below. The impact of the Council decision was to remove large tracts of upland parcels that were on the Draft Metropolitan Natural Resources Inventory.

Lane County co-adopted the Springfield Inventory of Natural Resource Sites on September 15, 2004, with the same provisions concerning safe harbor for uplands and the standard process for riparian areas. The action by the County Commissioners is required by an intergovernmental agreement between Springfield and Lane County. By permission of the County, Springfield exercises planning jurisdiction in the area outside of the city limits, but within the Urban Growth Boundary.

3.0 Springfield Inventory of Natural Resource Sites

3.1 Compiling Information for the Springfield's Goal 5 Inventory of Natural Resource Sites

As mentioned above, the Springfield Inventory of Natural Resource Sites had its roots in the work completed for the Metropolitan Natural Resources Special Study and the later Draft Metropolitan Natural Resources Inventory. The data collected for this inventory work and analysis was from several sources that were completed separately over a period of several years. These data sources include:

- National Wetland Inventory
- Springfield Local Wetland Inventory
- Oregon Freshwater Assessment Methodology (OFWAM) for Springfield's Local Wetland Inventory
- Oregon Department of Forestry and Oregon Department of Fish and Wildlife (ODFW) maps of fish bearing streams.
- Oregon Natural Heritage Program's database of threatened or endangered species (location and habitat radius). The most recent printout for Springfield was obtained in May 2004.
- Species of concern or habitats of concern mapped by ODFW. The most updated version of this data was obtained in 2004.
- Preliminary Inventory of Eugene & Springfield Wetland, Riparian & Upland Areas for Wildlife Habitat Value, Esther Lev, December 1988, Revised February 1990.
- The Natural Resources Mapping Project, Salix Associates, 1993.
- Update of Eugene-Springfield Metropolitan Area Wetlands, Riparian Areas, and Uplands, Fishman Environmental Services, April 1998.
- Data sets (e.g., geographic information system databases) and maps from local, state, and federal sources that pertain to these resources;
- Interpretation of high-resolution aerial photos of the area taken as recently as 1999;
- On-the-ground site visits and evaluations of almost all the sites;
- Interviews of natural resource professionals from other local (e.g., The Nature Conservancy (TNC)), state (e.g., ODFW, DSL), and federal (e.g., National Marine Fisheries Service) agencies and organizations concerned with natural resources;

- Input from natural resources professionals that live in the community; and
- Comments received from the general public and affected property owners during public workshops and public comment sessions.

With this wide variety of data sources, staff believe they have adequate data (as referenced in OAR 660-23-030-3) to proceed with a determination of significance for all sites included on this draft inventory. How a site was determined to be *significant* or *not significant* is discussed in the next section.

3.2 Identifying Significant Resource Sites

Screening Criteria

A set of screening criteria were produced by staff in 1988 to focus the early work of a consultant, Ester Lev, hired to assist with the natural resources inventory. The criteria were something of a filter used to sift through the many acres of resource land within the Eugene-Springfield Metro Plan Boundary. These screening criteria (A-H) are listed below:

- A. Areas mapped as wetland on the National Wetland Inventory and the Springfield Local Wetland Inventory.
- B. Areas which have been designated as jurisdictional wetland by the Oregon Division of State Lands or Army Corps of Engineers.
- C. Streams mapped on the Oregon Department of Fish and Wildlife and Department of Forestry Fish Bearing Stream maps.
- D. Undeveloped areas which contain natural vegetation (non-cultivated, including forests, natural prairies and meadows) and are larger than 1 acre.
- E. Undeveloped natural areas that are contiguous with a water feature.
- F. Areas which are undeveloped, and which in their natural state are un-vegetated (e.g., rock outcrops, gravel bars).
- G. Locations of plants listed as threatened or endangered, or considered official candidates to be listed as threatened or endangered by state or federal government.
- H. Documented habitat of animals listed as threatened or endangered, or considered official candidates to be listed as threatened or endangered by state or federal government.

The screening process involved overlaying several data layers to identify areas most likely to contain important wildlife habitat. Staff produced a series of overlay maps for this screening step. The maps were hand-drawn in 1988, and produced by the geographic information system for the update in 1998. The overlay maps included wetlands, water areas, riparian vegetation,

hydric soils, flood hazards, open space, drainage basins, and ecologically significant areas—data available that could be presented in mapped form and be used as an indicator, or initial screen, of where to find sites with wildlife habitat value. This approach was similar to that used by most jurisdictions staff contacted to learn about approaches to the inventory—using a set of criteria to screen sites for inclusion in the draft inventory. The consultant conducted preliminary field checks of all potential sites identified in this early screening and eliminated those sites which were developed, heavily disturbed, or of extremely low wildlife habitat value.

Administration of the Wildlife Habitat Assessment

Resource sites that were identified through the screening process were subjected to on-site evaluation by Ester Lev, using a protocol called the Wildlife Habitat Assessment (WHA). The WHA evaluates sites based on the food, water, and cover it offers for wildlife. The assessment determines a relative rating for each site based on 13 factors, such as seasonality of the water on the site, variety of food, layers of vegetation, and disturbance of the site. Field visits were made and rating sheets were completed for each site.

The WHA is a scientifically accepted system developed jointly by staff from the Oregon Department of Fish and Wildlife, Portland Audubon Society, U. S. Environmental Protection Agency, and U.S. Fish and Wildlife Service. It is the most common methodology used by Willamette Valley jurisdictions. The Cities of Beaverton, Gresham, Lake Oswego, Milwaukie, and Portland have used locally adapted versions of the Wildlife Habitat Assessment to assess their habitat resources. A more detailed description of the WHA methodology and a sample of the form used by field staff to record and analyze observed habitat characteristics are found in Appendix C.

Significance Criteria

A required step of Statewide Land Use Goal 5 is to determine if a site is *significant* or *not significant*. This determination occurs during the first major phase of the Goal 5 process, the inventory phase. Sites that are found to be *significant* are mapped on the inventory and subjected to the remaining steps in the Goal 5 process (e.g., Safe Harbor or ESEE analysis).

The administrative rules for Goal 5 (OAR 660-23) allow some flexibility in developing data sources, or criteria, to establish significance. Springfield chose to adopt a two-tiered approach for determining the significance of sites within its UGB¹. First tier criteria are very closely associated with the original screening criteria (described above) that were used to direct the work of the consultant, Ester Lev. The draft Tier 1 criteria that were presented to the Springfield Planning Commission and City Council included relevant information for identifying wetlands, riparian areas, and other wildlife habitat. Second tier criteria serve to narrow the list of sites identified by the Tier 1 criteria to only those sites that provide relatively high quality riparian areas, wetlands, or wildlife habitat. Action by the City Council on May 3, 2004 to adopt the Springfield Inventory of Natural Resource Sites included a provision that applied the “standard process” to riparian sites and “safe harbor” to upland wildlife habitat areas. That action had the

¹ With a few exceptions, sites outside the UGB are proposed to be inventoried based upon the safe harbor requirements of OAR 660-23. Therefore, sites outside the UGB are not subjected to these significance criteria.

affect of modifying the Tier 1 significance criteria, dropping those criteria pertaining to upland sites. The Tier 1 criteria listed below reflect the City Council's action.

The Tier 2 criteria are based on the Wildlife Habitat Assessment (WHA) that was administered by Lev and reported in 1990. When adopting the Inventory of Natural Resource Sites, the City Council preserved the Tier 2 criteria contained in the draft recommended by staff. The Tier 1 and 2 criteria are described in more detail below.

Tier 1 Significance Criteria

The Tier 1 significance criteria were used to generate a list of potential sites that were then subjected to Tier 2 significance criteria. A site needs to meet one or more Tier 1 criteria to be evaluated by the Tier 2 criteria. Below are the ten Tier 1 criteria that were used, along with the rationale for why each one was chosen:

1. Areas mapped as wetland on the State/National Wetland Inventory (S/NWI).

Rationale: Wetlands provide many significant values, including habitat for fish and wildlife, groundwater and surface water quality, stormwater and flood retention, erosion control, and sediment and pollution filtering. Wetlands also provide substantial scenic, educational, and recreational opportunities, as evidenced in the West Eugene Wetlands Program. The U.S. Fish and Wildlife Service (USF&WS) developed the S/NWI based on aerial photo interpretation. The S/NWI provides information about the locations of wetlands throughout the Metro area. This information is critical for areas where on-the-ground local wetland inventories have not yet taken place.

2. Areas that have been designated as jurisdictional wetland by the Division of State Lands or U.S. Army Corps of Engineers.

Rationale: Jurisdictional wetlands are wetlands that are regulated by the state, but may not be mapped on the S/NWI due to the scale of the S/NWI maps. Many jurisdictional wetlands occur in areas where no wetlands are mapped on the S/NWI. The Springfield Local Wetland Inventory (LWI) identifies many of these jurisdictional wetlands within the Springfield UGB.

3. Streams and other water bodies mapped on the Oregon Department of Fish and Wildlife and Oregon Department of Forestry Fish-Bearing Stream maps.

Rationale: Streams that are designated as fish-bearing by ODF and ODFW are generally larger, perennially-flowing (i.e., year-round) streams. These streams provide habitat for fish, food and water for wildlife, and the adjacent riparian areas are used extensively by wildlife. Streams also provide additional water quality and flood control benefits. As potential salmonid habitat, or tributaries of waterways with salmonid presence, these streams are important natural resources that are subject to protection under the ESA.

4. Undeveloped natural areas containing primarily native vegetation that are contiguous with a water feature and that provide fish or wildlife habitat.

Rationale: The convergence of water features and surrounding natural areas provide critical wildlife habitat, as well as stormwater and flood retention, and erosion control.

5. Locations of plants listed as threatened or endangered, or considered official candidates to be listed as threatened or endangered by state or federal government.

Rationale: Species that are listed under the state or federal ESA are usually listed because their habitat has been destroyed or altered. Conserving the remaining patches of a listed species habitat is consistent with the intent of Goal 5. In addition, actions that may result in a “take” (i.e., kill or harm) of listed plants are regulated by law under the ESA.

6. Documented habitat of animals listed as threatened or endangered, or considered official candidates to be listed as threatened or endangered by state or federal government.

Rationale: Species that are listed under the state or federal ESA are usually listed because their habitat has been destroyed or altered. Conserving the remaining patches of a listed species habitat is consistent with the intent of Goal 5. In addition, actions that may result in a “take” (i.e., kill or harm) of listed animals are regulated by law under the ESA.

7. Other ecologically significant areas identified by public natural resource agencies.

Rationale: Although the first nine criteria are thought to capture almost all important natural resource features in the planning area, staff believes that a small number of sites with features that are not currently appreciated or whose ecological importance is not fully understood, may not be captured by those criteria. These criteria allow natural resource professionals at other local agencies (e.g., ODFW) to suggest sites that may not meet the other criteria.

Tier 2 Significance Criteria

Tier 2 criteria served to narrow the list of sites generated by the Tier 1 criteria. Sites that meet one or more Tier 1 criteria were assessed using the Wildlife Habitat Assessment (WHA) methodology. A professional biologist was hired as a consultant to apply the WHA assessment methodology to each of the Tier 1 sites. The Tier 2 criteria are:

1. Sites that have been filled or substantially altered to the degree that they no longer exhibit important natural resource functions and values shall be removed from the Goal 5 inventory.

Rationale: During the time it has taken to process the inventory through the political process, much residential and commercial development has occurred. This criterion allows sites that were initially placed on the inventory to be removed when recent development on the site removes the important natural resource features or functions.

2. Sites with a WHA rating of 17 or greater shall be included on the Goal 5 inventory.

Rationale: The WHA determines a relative numerical rating for each site based on 16 factors, such as seasonality of the water on the site, variety of food, layers of vegetation, proximity to other sites, the presence of rare species and habitat types, and disturbance of the site. The WHA is a scientifically accepted system developed jointly by staff from the ODFW, Portland Audubon Society, U. S. Environmental Protection Agency, and USF&WS. It is the most common methodology used by Willamette Valley jurisdictions. The cities of Corvallis, Beaverton, Gresham, Lake Oswego, Milwaukee, and Portland each used variations of the WHA.

WHA scores can range from 0 to 100. Habitats that receive high scores on the WHA generally have one or more water sources (e.g., stream, wetland), multiple vegetative layers (e.g., canopy trees, shrubs, and understory herbaceous plants), and low physical or human disturbance. Habitats that score low on the WHA typically lack water and have a single vegetative layer. Examples of low-scoring, native habitats in the Eugene-Springfield area include upland prairie and oak savanna. These habitat types were formerly common in the Eugene-Springfield area but are now quite uncommon (due to agricultural and urban development), and these habitats harbor plants and animals that are less common, or are not found, in other habitat types. The threshold score of 17 (out of a total of 100 points) allows any habitat type with a significant component of native vegetation to be included on the inventory, while excluding highly disturbed sites.

Sites that passed the Tier 1 and Tier 2 criteria comprise the final proposed inventory of *significant* sites for the Metro NR Study. These sites will then be evaluated in the remaining phases of the Goal 5 process

3.3 High and Moderate Quality Natural Resource Sites

High Quality Natural Resource Sites

Areas with WHA scores of 45 or more

The WHA provides a numeric score that allows resource sites to be compared on the basis of their relative quality. As mentioned above, a number of Oregon communities have used the WHA for their Goal 5 inventories. Some of these communities have used a score of 45 or more to identify higher quality habitat sites. WHA scores of 70 or more represent exceptional sites with intact vegetative regimes that are connected to other habitat areas, have a nearby source of water and provide high quality food and cover for wildlife, including rare species. Only the natural areas along the McKenzie River (S17) and the Willamette River (WA/WB) have scores of 70 or more.

Sites with a score of 45-70 represent partially disturbed vegetative regimes that may be connected to other habitat and have a nearby source of water. Such sites score sufficiently high that they provide adequate food and cover for rare species of plants and wildlife.

Areas with Rare Plant, Animal Species Or Habitats Supporting These Species

Rare plant and animal species (including federal and state listed threatened and endangered species) are listed in *Rare, Threatened, and Endangered Plants and Animals of Oregon*,

published by the Oregon Natural Heritage Program (2001). In April 2004, the Oregon Natural Heritage Program provided the City of Springfield with a report listing the known occurrences of listed plants and animals within Springfield's planning jurisdiction. The report provided the location of these species by township/range and section.

Resource sites with known occurrences of federal or state listed species are considered high quality resource sites, apart from the WHA score.

Moderate Quality Natural Resource Sites

Sites with a WHA score less than 45 typically exhibit a high level of vegetative disturbance, have limited or no access to water and are isolated from other resource sites. These sites, however, may have high potential for restoration or enhancement.

3.4 Springfield Inventory of Natural Resource Sites

The table below lists the inventory of riparian sites that meet the Tier I and Tier II significance criteria discussed above. The table also ranks the sites as high or moderate quality according to the criteria listed above. The Inventory with site descriptions are included in Appendix A.

Table 3-1. Springfield Inventory of Natural Resource Sites

Site #	Acres	Tier 1 Significance Criteria Met	Tier 2 WHA Score	Quality Ranking	Site Name
S03 ¹	29.7	1,2,3,4	61-62	High	Mill Race A (Rural)
S04	42.9	2,3,4,6	40-41	Moderate	Mill Race B (Urban)
S07	23.9	1,2	34	Moderate	Brand S/Natron
S09	71.9	1,2,4	50	High	Weyerhaeuser B
S10 ¹	195.0	1,4,6	70	High	Weyerhaeuser A
S12/13	39.1	2,4	45 (Trees) 36 (No Trees)	High Moderate	Q Street Ditch
S14	2.4	2,4	35	Moderate	Guy Lee
S17 ¹	347.2	1,2,4,6	67	High	Maple Island Slough/ McKenzie River
S18	13.4	2,4	22-23	Moderate	SCS Channel #6
S20	19.6	1,2,4	67	High	Irving Slough North
S21	13.7	1,2,4	47	High	South Irvine Slough and Pond
S22 ¹	44.9	1,2,4	67	High	Jasper Road Slough
S24	8.0	2,3,4	55	High	Gray Creek
WA/WB	628.2	1,2,3,4,6	72-74 (Natural) 64-66 (Urban)	High	Willamette River
S25	12.30	1,4,5	46-47	High	Glenwood Slough
S26	1.56	1,4	17-57	High	Riverview/Augusta Channel
S27	.33	4	45	High	Petersen Equipment

					Daylighted Culvert
S28	.73	1,4	61	High	S. McVay Hwy. Channel
Total	1518.62				

¹All or part of these sites are outside the Urban Growth Boundary, and as such, are outside the jurisdiction of the City. Lane County has indicated that safe harbor provisions shall be applied to resource areas outside of the Urban Growth Boundary (UGB), within their jurisdiction. Setbacks or other development standards may be applied to land within Springfield's jurisdiction that is adjacent to these sites, under both safe harbor and standard process provisions. **Note: In November 2011, upon advice of the City Attorney, the maps depicting these sites were amended to show only those portions which are within Springfield's planning jurisdiction.**

4.0 Springfield Local Wetlands Inventory

In 1998, the City of Springfield completed and adopted a local wetland inventory in accord with state administrative rules. The 1989 Oregon State Legislature authorized the DSL to develop a statewide wetlands inventory suitable for planning and regulatory purposes. Cities were mandated to complete an inventory of the wetlands within their planning jurisdictions. Pursuant to ORS 196.674, DSL established Local Wetlands Inventory (LWI) standards and guidelines. The purpose of an LWI is to locate, map, and classify wetlands by type (e.g. forested wetlands) over a relatively large geographic area. The approximate boundary of wetlands greater than 0.5 acre in size is identified through the inventory. The approved LWI was incorporated into the statewide wetland inventory.

4.1 Background

In June of 1992, May of 1993, and again in April 1996, a Local Wetland Inventory (Inventory) was conducted by David Evans and Associates, Inc. within the urban growth boundary (UGB) of the City of Springfield and along Cedar Creek and Jasper Slough, in Lane County, Oregon. The UGB incorporates approximately 20 square miles (12,800 acres). The City limits represent approximately 13.5 square miles (8,600 acres) within the UGB.

Information was gathered from other regional inventories including the National Wetland Inventory [NWI], the Natural Resource Conservation Service (formally the US Soil Conservation Service [SCS]) and by previous Eugene-Springfield Metropolitan area studies; (Special Industrial Sites [SISS], Draft Natural Resource Special Study [NRSS], and the Springfield Industrial Lands Special Study [ILSS]). City staff mapped these inventories onto mylar overlays of aerial black and white photography at a scale of 1" = 400' (WAC Corporation, 1990). Infrared photography (1990), originally taken at a scale of 1:24,000 and later photo enlarged to a field scale of 1" = 400', was also supplied by the City to corroborate black and white aerial photography.

The infrared photography was scanned and then registered to the City's planimetric base maps (David Smith and Associates, 1990). Using the scanned images as backdrops behind the planimetric data (two foot contours, streams, curb lines, building footprints, etc.) and working hand-in-hand with DSL staff, each wetland was compared to DSL documents, field verified and then updated using the City's GIS equipment. Since the City of Springfield creates and updates tax lot by City surveyors using COGO (Coordinate Geometry) techniques based on the same

geodetic control (David Evans and Associates, 1990) used to generate the planimetric data, this produced highly accurate delineations registered to the tax lot base.

This Inventory was conducted using the Level 2 Routine Determination Methods described in the *Corps of Engineers (Corps) Wetland Delineation Manual* developed by the Corps Environmental Laboratory (1987). Evidence of hydrophytic vegetation, hydric soils, and hydrology were examined by wetland ecologists in conducting the wetland determinations.

Only those sites where the property owner granted written or verbal approval for access were inspected onsite. Where possible, properties where access was denied were inspected from adjacent parcels where access was granted, public right-of-ways, and aerial photo interpretation. It is possible that some wetlands exist within the UGB that do not appear in the inventory because access was denied and field verification was not possible. Findings of the field investigations resulted in the identification of 57 jurisdictional wetlands totaling 404.13 acres within the City of Springfield UGB, and 187.50 acres of other developed or created waters (“other waters”).

In the time since DEA completed the Local Wetlands Inventory was completed and acknowledged, the Inventory has been updated with the addition of newly discovered wetlands and by formal delineations of existing Inventory sites that more accurately define the boundaries of those wetlands. Typically property owners are referred by the City to the US Army Corps of Engineers and the Oregon Division of State Lands (DSL) if a proposed activity on their may affect a wetland. The DSL reviews wetland delineations submitted to their office and when acknowledged, the new delineations are sent to the City of Springfield for inclusion in the Local Wetland Inventory.

4.2 Identifying Springfield’s Locally Significant Wetlands

In 1999, the Oregon Division of State Lands funded an analysis of Springfield’s wetland sites to determine which met the state-defined criteria for significance. Using the Oregon Freshwater Wetlands Assessment Methodology (OFWAM), Pacific Habitat Services (PHS), Inc. conducted the analysis. PHS reviewed all available information for the approximately 586 acres of wetlands identified in the Local Wetlands Inventory. The OFWAM analysis identified 14 wetland sites that met the criteria adopted by the Oregon Division of State Lands for determining which of Springfield’s wetland sites are “significant” pursuant to ORS 197.279(3)(b) and OAR 660-023- 0100 (3)(b). The LWI and the OFWAM were updated by PHS in June 2003.

Wetlands within the Springfield UGB are considered *significant* if, through the Oregon Freshwater Wetland Assessment Methodology (OFWAM) evaluation, they:

1. Provide diverse wildlife habitat, intact fish habitat, intact water quality function, or intact hydrologic control function;
2. Are located within 1/4-mile of a “water quality limited stream” and have “intact” or “impacted or degraded” water quality function;
3. Contain rare plant communities or federal or state-listed species; or

4. Have a surface water connection to a stream that is habitat for indigenous anadromous salmonids and have “intact” or “impacted or degraded” fish habitat function; or
5. Represent a locally unique native plant community; or
6. Are publicly owned and have educational value.

4.3 High and Moderate Quality Wetlands

High Quality Wetlands

Additional criteria were applied to the inventory of “significant” wetlands to establish rankings of high quality and moderate quality. High quality wetlands were determined using a combination of key assessment variables (functions and values) from the OFWAM analysis that were used to determine wetland significance. High Quality Wetlands in Springfield are locally significant wetlands that provide highly rated ecological functions and have at least one of the following characteristics:

1. Have at least two of the following "high" OFWAM functional ratings:
 - diverse wildlife habitat,
 - intact fish habitat,
 - intact water quality function,
 - intact hydrologic control function;
2. Contain one or more rare plant communities; or
3. Provide habitat for federal or state listed species; or
4. Connect directly to a salmon-bearing stream

These locally significant, high quality wetlands are in **bold** typeface on the table below in Section 4.4 “Springfield’s Locally Significant Wetlands.”

Moderate Quality Wetlands

Locally significant wetlands that do not meet the above criteria are categorized as “moderate quality wetlands.” These locally significant, moderate quality wetlands are **not bolded** on the table below in Section 4.4 “Springfield’s Locally Significant Wetlands.”

Low Quality Wetlands

Sites that were determined through the OFWAM analysis to have relatively low resource value (i.e., non-locally significant wetlands) are not listed below and are not recommended for further consideration in this ESEE analysis. Low quality wetlands appear on the Springfield Local Wetland Inventory and are protected by the Oregon Division of State Lands, through their wetland permit process.

The tables below summarize the size and classification of the significant wetland areas within Springfield’s Urban Growth Boundary. A complete listing and site description of all wetlands on Springfield’s Local Wetland Inventory can be found in Appendix B.

4.4 Springfield's Locally Significant Wetlands

McKenzie River Basin Wetlands

Site Number	OFWAM Significance Rationale	Acres	USFWS Classification(s)
M4	Special Interest for Protection: Wetland inhabited by a species listed federally as threatened or endangered, or state listed as sensitive, threatened or endangered.	5.02	PEM
M5	Provides diverse wildlife habitat and hydrologic control function is intact.	9.00	PFO/PSS/PEM
M14	Provides diverse wildlife habitat.	33.45	PEM/PFO
M16a-c	M16a: Water quality and hydrologic functions are intact. M16b: Hydrologic function is intact. M16c: Hydrologic Function is intact	13.96	PFO/POW/RLP/PEM
M20	Provides diverse wildlife habitat and water quality is intact	0.52	RLP
M26	Provides diverse wildlife habitat; provides recreational and educational opportunities;	1.85	PFO/PEM/PSS
M28	Special Interest for Protection- Mitigation Site	1.51	PEM
M29	Special Interest for Protection- Wetland inhabited by a species listed federally as threatened or endangered, or state listed as sensitive, threatened or endangered.	1.08	PFO/PEM
M30	Water quality function is intact	6.49	PFO/PEM/POW
M33a	Hydrologic control function is intact	3.39	PEM
	McKenzie Basin Acres	76.27	

Willamette River Basin Wetlands

Site Number	OFWAM Significance	Acres	USFWS Classification(s)
W2	Special Interest for Protection -Wetland inhabited by a species listed federally as threatened or endangered, or state listed as sensitive, threatened or endangered.	0.90	PEM
W3a	Water quality function is intact	15.30	RLP
W4a	Water quality function is intact	.67	PFO
W12	Water quality and hydrologic functions are intact	1.42	PFO
W16	Water quality and hydrologic functions are intact	1.46	PFO/PEM
W18a	Water quality and hydrologic functions are intact	128.80	PEM/PFO
W19	Hydrologic control function is intact	41.65	POW/PFO
W20	Water quality and hydrologic functions are degraded	3.73	PSS/PUB
W21	Water quality and hydrologic functions are degraded	.47	PSS
W22	Water quality and hydrologic functions are degraded	2.53	PFO
W23	Water quality and hydrologic functions are degraded	.87	PEM
W24	Water quality and hydrologic functions are degraded	.51	PFO

Site Number	OFWAM Significance	Acres	USFWS Classification(s)
	Willamette Basin Acres	201.7	
	Total acreage for all Locally Significant Wetlands	277.97	

5.0 OVERVIEW OF THE GOAL 5 STANDARD APPROACH

The legal requirements to comply with Statewide Planning Goal 5 are contained in the goal itself and Oregon Administrative Rule 660, Division 23 (the “Goal 5 rule”). The Goal 5 rule replaces a former version of the rule OAR 660-016-0000. The revised Goal 5 rule is similar in many respects to the old rule, and interpretations of the old rule by the Land Use Board of Appeals and the Oregon Courts are relevant guidance to applying the OAR 660, Division 23. The Goal 5 rule retains the fundamental requirements of an inventory of resource sites, consideration of the consequences of allowing, limiting or prohibiting conflicting uses within those sites and implementing regulations to comply with Goal 5. However, a “safe harbor” option has been added to the rule, allowing local governments to streamline their Goal 5 program by applying protective measures, which are set forth in the Goal 5 rule, to identified resource sites.

5.1 Completing an Inventory of Significant Resource Sites

The first step in the standard Goal 5 process is an inventory of “existing and available” information on Goal 5 resource sites. A resource site describes an area identified by the local government, which is not limited to individual parcels or tax lots (*Columbia Steel Castings Co. v. City of Portland*, 314 Or 424, 840 P2d 71, 74 (1992)). The Goal 5 rule defines “resource site” to be “an area where [Goal 5] resources are located” [OAR 660-023-0010(10)]. This can include multiple contiguous lots and parcels. For example, the resource site for a riparian corridor can include the corridor within all or part of a watershed. The types of information that should be gathered include existing inventories, surveys and other available data. The rule states that “at a minimum” the local jurisdiction must notify state and federal resource agencies and request current information and consider other information submitted during the local process [OAR 660-023-0030(2)].

Once an inventory has been completed, the Goal 5 process requires that local governments determine whether the existing information for resource sites is “adequate.” If information is determined to be inadequate for a resource site, then the local government cannot proceed with the Goal 5 process for that resource site [OAR 660-023-030(3)]. Information is adequate if it provides the location, quality and quantity of natural resources at a proposed site. Location can be determined from maps, inventories, surveys and the other sources listed above. The quality determination requires a comparison of the site to others in the region or nearby. Quantity is a determination of relative abundance of the type of resource being reviewed.

If the information gathered about a resource site is considered adequate, the Goal 5 process then calls for a determination of whether a resource site is “significant.” Significance is determined based upon the location, quantity and quality of the resource. Some of the criteria for determining significance are found in the rules governing specific Goal 5 resources. Local governments also may rely on “any additional criteria adopted by the local government” [OAR

660-023-0030(4)(c)]. This represents a broad delegation of authority from the Land Conservation and Development Commission (LCDC) to local governments to add criteria to determine the significance of resource sites. The local governments may draw the criteria from existing policy documents such as comprehensive plans and ordinances, or create criteria based on the data gathered in the first step of the inventory.

5.2 ESEE Analysis

The next step in the standard Goal 5 process is the ESEE analysis. This is an analysis of the ESEE consequences of a decision to allow, limit or prohibit a conflicting use near a significant Goal 5 resource site [OAR 660-023-0040(1)]. The Goal 5 rule does not prescribe how local governments should conduct this analysis or that the four categories must be measured in a certain way. Local governments may generally describe the ESEE impacts of allowing or prohibiting conflicting uses near Goal 5 resources and apply that analysis to individual resource sites. *Callison v. LCDC*, 145 Or App 277, 929 P2d 1061 (1996). However, the rule does describe three components to the process:

- 1) Identify the Conflicting Uses,
- 2) Determine the Impact Area of the Conflicting Uses
- 3) Analyze ESEE Consequences.

Identify the Conflicting Uses

Determining conflicting uses requires a look at existing zoning and land uses around the resource site. The zoning describes permitted and conditional uses allowed for those areas. The Goal 5 rule requires that the local government identify conflicting uses that exist or could occur near the resource site, but does not demand that local jurisdictions speculate on future uses or uses that are unlikely to occur in the impact area. Conflicting uses can be analyzed separately or grouped together with other similar uses. However, rules governing each of the listed Goal 5 resources may contain specific uses that the local government must consider as conflicting uses. For example, rules that apply to riparian corridors require the local government to consider whether the two following riparian conditions are conflicting uses wherever they occur:

- (a) permanent alteration of the riparian corridor by placement of structures or impervious surfaces; and
- (b) removal of vegetation in the riparian area [OAR 660-023-0090(7)(a & b)].

Determine the Impact Area of the Conflicting Uses

Impact areas must be drawn around the area within which conflicting uses “could adversely affect” the Goal 5 resources. The impact area should define the geographic limits within which to conduct the ESEE analysis [OAR 660-023-0040(3)]. The Goal 5 rule allows local governments substantial discretion in determining what the impact area may be for the resource sites. According to the rule, the impact area can be the area that the local government determines

"could adversely affect" the identified resource. LUBA has acknowledged that this process can be somewhat subjective. *Palmer v. Lane County*, 29 Or LUBA 436 (1995).

Local governments have very broad discretion in determining the impacts on the Goal 5 resource. Impacts on air, water, surface water quality, noise and fish and wildlife have all been considered as factors that may determine the impact area. Local jurisdictions are free to choose which impacts they consider most important. The size of the impact area is also a decision for the local government, and can be quite large, so long as there are reasons to support the extent of the impact area. *Sanders v. Yamhill County*, 34 Or LUBA 782 (1998).

Analyze ESEE Consequences

The ESEE analysis must consider the consequences "that could result from decisions to allow, limit or prohibit" conflicting uses. The analysis requires the local government to consider both the impact of the resource site on the conflicting use and the impact of the conflicting use on the resource site. *Columbia Steel Castings Co. v. City of Portland*, 840 P2d at 76. The Goal 5 rule permits local governments to create a matrix of commonly occurring conflicting uses and apply it to individual resource sites. This analysis allows local governments to identify categories of uses that do not conflict with Goal 5 resources. For example, open space zones may be determined not to conflict with Goal 5 riparian or wetland resource sites. The Goal 5 rule allows local governments to conduct a single conflicting use analysis for two or more resource sites that are in the same area or are similarly situated and subject to the same zoning [OAR 660-023-0040(4)].

The ESEE analysis provides the basis for determining whether to allow, limit or prohibit the conflicting uses near significant resource sites. Again, the local government has discretion in deciding whether to regulate a conflicting use. If the local government determines, based on the ESEE review, that conflicting uses are detrimental to the resource, then those uses may be completely prohibited. OAR 660-023-0040(5)(a). The local government may decide that the conflicting use does not impact the significant Goal 5 resource site or is more important than the resource site, and partially or fully allow the conflicting use in that area [OAR 660-023-0040(5)(b & c)].

Program To Achieve Goal 5

The final step in the Goal 5 process is the program to achieve Goal 5. It consists of comprehensive plan provisions and land use regulations that set forth the degree of protection "for each significant resource site." OAR 660-023-0050(1). The critical aspect of any resulting regulations is that they be "clear and objective." The rule sets forth several examples of clear and objective standards. One is a fixed numerical buffer width. The Goal 5 rule does not set limits on such buffer widths. Once the local government makes a decision to protect a resource site, the rule requires only that protective regulations impose a buffer sufficient to achieve full protection of the site. Other permitted clear and objective criteria are performance standards that describe an outcome. Different performance standards may be applied to individual resource sites.

The rule also provides the option to have alternative discretionary standards so long as applicants for development permits have a choice of using the clear and objective criteria [OAR 660-023-0050(3)]. The City of Portland implemented this “two-tiered” program in its Goal 5 program in 1995. The first tier consists of clear and objective development standards for areas in and around identified Goal 5 resources. The second tier consists of a discretionary “environmental review” procedure that can be sought at the request of the development applicant where the applicant wishes to vary from the first tier standards. The Goal 5 rule was subsequently amended to expressly allow this type of discretionary process for all local governments in the State.

This two-tiered approach can be implemented at a regional level. In addition to a set of clear and objective standards that apply to regional resources, Springfield can develop a set of discretionary performance standards, which account for site-specific conditions related to those resources. This approach is consistent with the Goal 5 rule and provides some flexibility in implementing a regional program for achieving Goal 5.

5.3 The Safe Harbor Alternative

The Goal 5 rule contains an alternative “safe harbor” option for local jurisdictions that desire to abbreviate the Goal 5 process. The safe harbor option allows local governments to replace portions of the standard Goal 5 process with processes set forth in the rules for each of the listed Goal 5 resources. For example, the safe harbor process for riparian corridors allows local governments to skip the “significance” determination in [OAR 660-023-0030(4)].

For Goal 5 resources like riparian corridors, the data gathering portion of the safe harbor inventory is almost identical to the standard Goal 5 process. Local governments must compile available data from six sources including Federal and State maps and fish and wildlife surveys [OAR 660-023-0090(4)]. The safe harbor method skips the “adequacy” and “significance” determination. Instead, the local jurisdiction imposes a 50-foot setback from all fish-bearing lakes and streams and a 75-foot setback from all streams with average annual stream flow greater than 1,000 cubic feet per second (csf). [OAR 660-023-0090(5)]. This process acts as a catchall so that no riparian corridor resource is missed. It also minimizes the more detailed determinations of whether information is adequate or whether sites can be considered significant.

The safe harbor provisions replace the ESEE analysis with a recipe for an ordinance that will protect Goal 5 resources. For riparian corridors, the ordinance must prevent permanent alteration of the riparian areas such as grading and placing structures or impervious surface in the buffer area [OAR 660-023-0090(8)]. The ordinance must also control the removal of riparian vegetation. However, like the other sections of the Goal 5 rule, the safe harbor provisions provide local governments with substantial discretion to allow placement of structures and impervious surface in the protected area if there is a demonstration that “equal or better protection” for the resource can be provided through enhancement or restoration of the buffer area.

6.0 Identifying Conflicting Uses

6.1 Introduction

“Conflicting use” describes a land use or other activity that could adversely affect a significant Goal 5 resource (OAR 660-023-0010(1)). The conflicting use analysis identifies threats to the natural function of a resource site from currently and potentially allowed land uses. The most common example of a conflicting use with a resource site is zoning which allows new development. Building a house or constructing a street on a resource site will very likely adversely affect the functions of that site—(ie., the two uses are in conflict). Development land use categories represent the bulk of conflicting uses, but Goal 5 more broadly defines conflicting uses as any activity reasonably and customarily subject to land use regulations. For instance, excavating and filling to change the slope on a site, while not actually a land use, can affect a wetland or riparian area and would be subject to the rule as a conflicting use. Clearing of a forested area for development may affect it’s value as habitat for sensitive species that use the area. Other examples include any site alteration that may change the quantity or quality of water that affects wetlands and riparian sites. The creation of new impervious surfaces; changes to drainageways, discharges, and shading; and the removal of vegetation are all land management activities that may present conflicts.

Following the inventory of Goal 5 resources, local governments must identify conflicting land uses that are allowed within inventoried resource sites. To identify such conflicts, the rule directs local governments to examine the uses allowed within broad zoning categories (e.g., residential or commercial). The city’s analysis considers permitted uses, uses subject to limitations or conditions (i.e., discretionary uses), and certain uses that may not be allowed in a base zone but may be permitted by recognition of legal nonconforming status or as a temporary activity.

Within Springfield’s resource sites, housing is the most common existing land use, but a wide variety of uses can be found. These uses occur on properties that contain significant resources as identified in the Inventory. Significant natural resource sites can be found on properties within virtually all of the City’s zoning categories. The following section describes the uses allowed within each of the zones. The subsequent section addresses the potential conflicts and resource impacts caused by each of these uses.

6.2 Uses Permitted by Zoning

The following section describes the land uses allowed in Springfield’s base zones. The subsequent analysis of ESEE consequences of protecting significant resources addresses the existing and potential conflicting uses allowed within each resource site. Tables 6-1 through 6-3 summarize allowed and conditional uses within each of the City’s base zones.

Low Density Residential District (LDR). The LDR District is intended to fully implement the Metro Plan low density residential designation, any applicable refinement plan, and establishes sites for Low Density Residential development where the minimum level of urban services are provided. The maximum dwelling units per developable acre permitted is 10.

Medium Density Residential District (MDR). The MDR District is intended to fully implement the Metro Plan Medium Density Residential designation, any applicable refinement plan, and establishes sites for medium density residential development where the minimum level of urban services are provided. Single-family or multiple-family dwellings are permitted with a minimum density of more than 10 units per developable acre and a maximum density of 20 units per developable acre.

High Density Residential District (HDR). The HDR District is intended to fully implement the Metro Plan High Density Residential designation, any applicable refinement plan and establishes sites for high-density residential development where the minimum level of urban services are provided. Single-family or multiple-family dwellings are permitted with a minimum density of more than 20 units per developable acre and a maximum density of 30 units per developable acre.

Neighborhood Commercial District (NC). The NC District is intended to fully implement Metro Plan Text addressing Neighborhood Commercial facilities and any applicable refinement plan. This district designates sites up to 3 acres in size to provide for the day-to-day commercial needs of populations up to 4,000 people.

Community Commercial District (CC). The CC District is intended to fully implement the Metro Plan Community Commercial Center designation and any applicable refinement plan. This district designates sites to provide for a wide range of retail sales, service and professional office use. This district also includes all existing strip commercial areas.

Major Retail Commercial District (MRC). The MRC District is intended to fully implement the Metro Plan Major Retail Center designation and any applicable refinement plan. This district may also be applied to large, vacant tracts of CC Community Commercial land that are suitable for the siting of new shopping centers, in which case the minimum development area shall be 20 acres.

General Office District (GO). The GO district is intended to encourage appropriate office development and to implement neighborhood refinement plans. This district is designed to be a transition zone, providing a buffer between residential and more intensive commercial development at the boundaries of a Community Commercial or Major Retail Commercial designation. A development area of at least one acre shall be required.

Light-Medium Industrial District (LMI). The LMI District is intended to fully implement the Metro Plan Light-Medium Industrial designation and any applicable refinement plans. Light and medium industries are generally involved in the secondary processing of materials into components, the assembly of components into finished products, transportation, communication and utilities, wholesaling and warehousing. The external impact from these uses is generally less than Heavy Industrial and transportation needs are often met by truck. Activities are generally located indoors, although there may be some outdoor storage. This designation also can accommodate supporting offices and light industrial uses.

Heavy Industrial District (HI). The HI District is intended to fully implement the Metro Plan Heavy Industrial designation and any applicable refinement plans. These industries are generally involved in the processing of large volumes of raw materials into refined materials and/or

materials that have significant external impacts. Heavy Industrial transportation needs often include rail and truck. Examples of such uses are: production of lumber and wood products; paper; chemicals and primary metal manufacturing; large-scale storage of hazardous materials; power plants; and railroad yards. Less intensive industrial uses that are permitted in the LMI District are permitted in this district.

Special Heavy Industrial Districts (SHI). The SHI District is intended to fully implement the Metro Plan Special Heavy Industrial designation and any applicable refinement plans. These areas are designated to accommodate industrial developments that need large parcels, particularly those with rail access.

Quarry and Mine Operations District (QMO). The QMO District is intended to implement the Metro Plan Sand and Gravel designation as well as the Environmental Resources Element of the Metro Plan as it applies to inventoried natural resources that include aggregate resources. The QMO district allows the extraction and storing of rock and rock products, the processing of rock into various products and the sale of those products generated from quarry operations.

Mixed-Use Commercial District (MUC). The MUC District implements areas designated for mixed-use on adopted refinement plans, specific area plans and specific development plan diagrams where a mix of commercial with residential uses is intended. Development within the MUC District shall have a commercial dominance, with residential and public uses also allowed. Lots in the MUC District shall generally have frontage on either an arterial or collector street.

Mixed-Use Employment District (MUE). The MUE District implements areas designated for mixed-use on adopted refinement plans, specific area plans and specific development plan diagrams where a mix of light-medium industrial or special light industrial uses with commercial or medium-high density residential uses is intended. Development within the MUE District shall have an employment (industrial) emphasis, but may include commercial, public and multi-family residential uses. Lots in the MUE District shall generally have frontage on either an arterial or collector street.

Mixed-Use Residential District (MUR). The MUR District implements areas designated for mixed-use on adopted refinement plans, specific area plans and specific development plan diagrams where a mix of medium and high density residential with commercial uses is intended. Development within the MUR District shall have a multi-family residential emphasis, but may include small-scale retail, office and service uses when they are developed as part of a mixed-use development in order to increase housing opportunities in close proximity to designated commercial zones; support the retail, office and service uses of the adjacent commercial zone; and to provide options for pedestrian-oriented lifestyles. Lots in the MUR District shall generally have frontage on either an arterial or collector street.

Medical Services District (MS). The MS District is designed to provide for hospital expansion and for suitable, geographically dispersed areas for the development of hospitals and associated medical residential facilities. These facilities shall be developed comprehensively and shall be designed to ensure compatibility with the surrounding neighborhood.

Nodal Development Overlay District (/NDO). The /NOD designation is established to work in conjunction with underlying zoning districts to implement transportation related land use policies found in the Eugene-Springfield Area Transportation Plan (TransPlan) and in the Eugene-Springfield Metro Area General Plan. The /NDO District also supports “pedestrian-friendly, mixed-use development” as outlined in the State Transportation Planning Rule.

Public Land and Open Space District (PLO). The PLO District is intended to implement the Metro Plan Public and Semi-Public designation, which includes Government, Education and Parks and Open Space designations. The district allows public and private educational facilities, parks, cemeteries and golf courses. The district also provides for public offices, libraries, other government or publicly-owned facilities and similar uses located in areas designated on the Metro Plan Diagram.

Key to Tables 1-3:

'P' = PERMITTED USE, subject to the standards of the Springfield Development Code; may be processed under Type I, II or III procedures.

"S" = SPECIAL USE, subject to special locational and siting standards to be met prior to being deemed a permitted use; may be processed under Type I, II or III procedures

"D" = DISCRETIONARY USE, may or may not be permitted, based upon the application of general criteria; may be subject to special locational and siting standards to be met prior to being deemed a permitted use; processed under Type III procedures

- = NOT PERMITTED

Table 6-1. Uses Permitted in Residential and Open Space Zones

Use Categories	LDR	MDR	HDR	MUR	PLO
Accessory Structures	S	S	S	S	P
Agricultural Uses	P	P	P	P	P
Churches	D	D	D	D	-
Professional Offices	S	S	S	S	-
Single Family Units	P	P	P	-	-
Multi-Family Units	-	P	P	P	-
Day Care Facilities	P	P	P	S	P
Educational Facilities	D	D	D	D	S
Group Care Facilities	D	S	S	S	-
Half-way Houses	-	D	D	D	-
Parks	D	D	D	P	P
Public Utilities	S	S	S	S	D
Transient Accommodations	S	S	S	S	-

*The PLO District is not listed among the residential zones, but shares many of their uses and impacts.

Table 6-2. Uses Permitted in Commercial Zones

Use Categories	NC	GO	CC	MRC	MUC	MS
Agricultural/ Animal Sales And Services	-	-	P	S	-	-
Automotive, Marine, Mobile/Manufactured Home Sales, Service Storage Repair	-	-	P	S	-	-
Business And Professional Offices And Personal Services	P	P	P	P	P	P
Day Care Facilities	S	S	S	S	S	S
Eating And Drinking Establishments	P	P	P	P	P	-
Public Utilities	S	-	S	S	S	-
Recreational Facilities	P	-	P	P	P	-
Religious, Social and Public Institutions	P	P	P	P	D	-
Single Family Residential Uses	P	-	P	-	-	-
Multi-Family Residential	S	-	S	S	P	-
Retail Sales	P	S	P	P	P	-
Small Scale Repair and Maintenance Services	S	-	P	-	S	-
Transient Accommodations	-	-	P	-	-	-
Transportation Facilities	-	-	S	S	P	-
Warehouse Commercial Retail and Wholesale Services	-	-	P	-	-	-

*The MS District is not listed among the commercial zones, but shares some of their uses and impacts.

Table 6-3. Uses Permitted in Industrial Base Zones

Use Categories	LMI	CI	MUE	HI	SHI	QMO*
Manufacture And/Or Assembly	P	P	P	P	S	*P
Transportation Related, Non-Manufacturing	P	-	P	P	S	-
Service And Repair	P	-	P	P	S	-
Warehouse Commercial, Wholesale Trade, Storage And Distribution	P	-	P	P	S	-
Business, Labor, Scientific And Professional Organizations And Headquarters And Recreational Uses	P	P	P	P	S	-
Recreational Facilities	P	-	P	P	S	-
Agricultural Cultivation of Undeveloped Land	P	P	P	P	P	-
Public Utilities Facilities	S	S	S	S	S	-
Public Schools	D	D	D	-	-	-

*The QMO District is not listed among the industrial zones, but its primary activity, the extraction, processing and sale of rock products has similar impacts to heavy industrial uses.

6.3 General Impact of Conflicting Uses on Natural Resources

This section provides a review of the potential impacts of permitted conflicting uses on significant resources identified in the Natural Resources Inventory. One impact that is common to virtually all conflicting land uses is the creation of impervious surfaces. Impervious surfaces are mainly constructed surfaces - rooftops, sidewalks, roads, and parking lots - covered by impenetrable materials such as asphalt, concrete, brick, and stone. These materials seal surfaces, repel water and prevent precipitation from infiltrating soils. This section is introduced by a brief

description of the amount of impervious surface that might result from various types of land uses and the anticipated impacts of replacing natural areas with impervious surfaces.

The remainder of this section discusses in more detail the type of impacts that residential, commercial, industrial and other uses can have on resource sites. Where the same impacts are identified for different conflicting uses, the first impact analysis in the text is referenced and not repeated.

Impervious Surfaces

In 1989, Seattle Public Utilities developed impervious surface ratings by land use categories. These ratings provide general information about the percentage of impervious surface associated with different kinds of development. The following table lists those percentages. In surveying the available scientific literature, it was noted that the degradation of water quality and habitat accelerate rapidly in watersheds when impervious surface areas are 12-13% of the total area. Current studies indicate an even lower threshold for stream degradation.

Land Use Categories	Variability Factors	Imperviousness%
Residential-Single Family	Building footprint, driveway, yard	45
Commercial, Mix Use, Multi-Family Residential	Building, parking lot, landscaping, setbacks	75
Industrial (light)	Building, parking lot, landscaping, setbacks, unpaved lots	70
Parks, School Recreational Facilities	Vegetation, paths, parking	10
Public and Transportation Facilities	Paved roadway, sidewalks, shoulder	60
Vacant	Same as park	10

Increased impervious surface area in a watershed reduces groundwater filtration and recharge of cooler, clean water. This alters stream hydrology, which means there may be too little or too much water in a stream. When groundwater infiltration is reduced, lower summer stream base flow and elevated water temperatures may result, potentially killing fish and macro-invertebrates upon which aquatic life depends.

Increased impervious surfaces result in greater volume and velocity of stormwater runoff discharged into receiving streams. This can result in higher peak stream flows, more severe flooding, scouring of streambed gravel needed for fish spawning and rearing, eroding of streambanks more rapidly, undercutting and downcutting of streams, all of which reduce in-stream and/or streamside habitat.

Impervious surfaces contribute to higher water temperature (thermal pollution) in streams from stormwater running off heated surfaces such as parking lots into streams. Elevated water temperature can affect the metabolism and alter the feeding activity of fish, affect the quantity and quality of aquatic food sources, inhibit reproductive cycles, increase the virulence of fish diseases and can kill salmon and trout directly.

Vegetation and Grading

Perhaps the most pervasive adverse impact on wetland and riparian functional values results from removal of vegetation and excavation. Top soil disturbance or removal is almost always a component of development. Such disturbance, if not managed results in erosion of the development site and sedimentation of nearby watercourses. Effective management of stormwater runoff at construction sites helps minimize these impacts. Springfield requires construction plans to include planning for runoff controls as part of their overall construction design.

6.4 Categories of Conflicting Uses and Their Impacts

Residential Uses

Residential uses identified in the zoning code include household living and group living. Household living is residential occupancy of a dwelling unit by a household. Group living is different from household living in that it involves occupancy of a structure by a group of people who do not meet the definition of a household. For the purpose of a conflicting use analysis, both types of residential uses can degrade or destroy natural resources during construction and use of residential structures. This section examines the consequences of housing, for both households and group living situations, on Goal 5 resources.

Preparing land for housing commonly includes removal of vegetation. Removal of vegetative cover eliminates habitat for native wildlife. Lost habitat includes feeding, nesting, perching and roosting places for birds and loss of feeding, nesting and refuge areas for mammals, reptiles, amphibians, fish and insects. Clearing also removes important structural features of the forest such as multi-layered canopies, snags, downed logs, and large trees. These habitat components are removed and replaced with ecologically barren buildings, fences, lawns, driveways, parking lots and other impervious surfaces. Single-family residential development and supporting infrastructure can be expected to cover about 45% of land areas with impervious surfaces. Apartment complexes and other higher density residential developments create about 75% coverage with impervious surfaces.

Forest fragmentation caused by the clearing of vegetation for residential uses increases the isolation of one habitat area from another. This can form barriers to wildlife migration and can limit the genetic exchange among populations. Roads (and roadway traffic) and fences can also form barriers to wildlife migration. As the range of habitat for indigenous wildlife becomes restricted and isolated, opportunities for recruitment from other areas are limited and wildlife populations become vulnerable to disease, predation and local extinction.

Household lights, loud noises and other outdoor human activities disturb the breeding and predator instincts of animals. Activity levels as defined by noise and movement increase from between 10 and 100 times that of normal (natural system) producing disruptions in competition, communication, mating and predation habits of animals, and make it difficult or impossible for many native species to exist (Brown 1987). Additionally, household litter and garbage in resource areas degrades habitat values, and household pets can kill or injure native wildlife and

compete for limited space. Other detrimental impacts of housing include reduction of open space, and degradation of scenic and recreational values.

The steep slopes within resource areas become susceptible to erosion, slumping and landslides when forest cover is removed and when cuts and fills are made for roads and buildings. Vegetation clearing and site grading activities accelerate soil loss and erosion and can precipitate landslides and flooding, posing significant hazards to people and property and degrading habitat values. Soil loss and erosion can also result from common construction activities such as vegetation removal, grading and compaction on sites with gentle slopes. These activities can reduce the capacity of soils to support vegetation and absorb groundwater by reducing soil fertility, microorganisms, seeds, and rootstocks, and damaging soil structure.

The construction of homes, roads and other impervious surfaces has adverse consequences beyond those described above. Additional adverse effects of residential development include:

- Erosion, flooding, and landslides: Increased storm runoff and peak flows, resulting in soil loss and erosion, bank undercutting and failure, and potential landslides and floods. These activities can damage soil structure and fertility, degrade or eliminate wildlife habitat, and can result in public safety hazards.
- Hydrology: Reduced groundwater recharge, altered volumes of water in wetlands and surface drainages contributed by groundwater. This can alter an area's hydrology by lowering surface water levels or groundwater tables and removing a local source of water and moisture essential to the survival of fish, amphibians and aquatic organisms as well as terrestrial animals.
- Pollution: Oil, gas, tar, antifreeze, and other contaminants from vehicles, heating and cooling systems, and roofs degrade habitat and water quality; heated runoff from roads and parking lots can cause thermal pollution and have detrimental effects on local fish runs; pesticides, herbicides, and fertilizers used on residential grounds can pollute ground and surface waters and degrade habitat; dirt and mud eroded from cultivated land or deposited from vehicles can cause sedimentation of wetlands and streams; septic drain fields and animal wastes can contaminate ground and surface waters.

Common residential landscaping practices may also have detrimental impacts. The removal of native vegetation and the establishment of lawns and non-native landscape features reduce resource values. Lawns and non-native vegetation require regular irrigation, which reduces drinking water supplies and can exacerbate summer water shortages. Landscape trees, shrubs and groundcover plants often include invasive, non-native species that escape into natural areas and compete aggressively with natives. English ivy, holly, and laurel are examples of commonly used invasive species used in residential landscaping.

The form and layout of residential development can have a significant impact on resource values. For example, a clustered development at an overall density of 9 units per acre, but with small lots, alternative housing types, and large areas of open space set aside on the site will have fewer

impacts than a development at 5 units per acre with developed lots spread evenly across the entire site.

Commercial Uses

Commercial uses have all of the detrimental effects described for residential uses above. However, commercial uses typically use more of the site and require more extensive site clearing and grading, and the detrimental effects of vegetation removal, building construction, and human use are generally much greater than those described for residential uses. In addition, parking lots, which are not normally a major impact for housing, are common with commercial uses and substantially increase the detrimental impacts due to impervious surfaces (e.g., reduced infiltration and higher runoff, lower groundwater levels, interference with the transfer of air and gases from the soil). The percentage of impervious surface to be expected from commercial development designations is about 75%.

Commercial uses also can significantly diminish or destroy open space, scenic, and recreation values. Certain residential impacts such as pet wastes and fertilizers and pesticides from lawn and garden areas may be somewhat reduced, but oil, gasoline, and vehicle-related contamination can increase. There are ways to partially mitigate this detrimental effect through parking lot landscaping and stormwater design.

Industrial Uses

Industrial uses have all of the detrimental effects described for commercial uses above. Industrial uses often require complete site clearing and grading, with the retention of few, if any, natural resources on a site.

Industrial uses therefore can have more severe environmental effects than commercial uses. They have impervious surface impacts similar to commercial uses and can also diminish or destroy open space, scenic, and recreational values. The percentage of impervious surface to be expected from industrial development designation is about 70%.

In addition, industrial uses often draw substantial amounts of water from wells and public water sources. Extensive use of groundwater can result in draw down of the water table, which in turn can reduce surface water flows in streams and eliminate a water source for wildlife. Industrial uses may involve hazardous material use and storage, waste storage and recycling, and other activities that require special permitting and the construction of pollution control devices to ameliorate specific impacts.

Public Lands/Open Space

Parks and open area uses focus on natural areas, community gardens, or public squares. These lands tend to have few structures and include parks, golf courses, cemeteries, recreational trails, and botanical gardens. Parks and open areas construction and maintenance practices can cause erosion and damage vegetation and habitat. Removal of vegetation, creation of impervious surfaces such as roads, parking lots, and tennis courts, and construction of buildings are activities

commonly associated with development of parks and open areas. The environmental consequences of these activities are similar to those described for residential uses except that normally a smaller percentage of land area is covered by impervious surfaces. The percentage of impervious surface to be expected by this development designation is only about 10%.

Intensive recreation such as cycling, motoring, and equestrian sports also cause erosion, particularly when they occur off maintained trails.

Agriculture

Springfield has no zone designation for agricultural use, but agricultural activities are allowed in several zoning districts, particularly on undeveloped property. Traditional agriculture uses involve clearing vegetation, plowing fields, and exposing bare soils, all of which cause erosion that can degrade water quality and can adversely impact aquatic habitat. The removal of woodland cover for farming has the same habitat effects as those for housing but with fewer hydrologic impacts. The conversion of forest to farmland replaces diverse forest plant communities with few, cultivated species. Vegetation acts as a filter, cleansing runoff before it reaches streams or wetlands. Removal of vegetation for agricultural uses eliminates these benefits. Agriculture also commonly (but not always) involves the use of pesticides, herbicides, and fertilizers. These chemicals can contaminate surface and groundwater areas and harm wildlife. Animal fecal contamination can occur as a result of pasture use and can have similar environmental effects.

Agriculture may draw irrigation water from wells. Extensive use of groundwater can result in draw down of the water table, which in turn can reduce surface drainage flows and eliminate a water source for wildlife.

Quarry Mining

Mining is normally conducted for mineral aggregate resources. Mining generally has the most severe environmental impacts of all uses within the site. Mining normally eliminates all resources from an area. Once a mining operation is closed, some restoration of soil, vegetation and other resources may be possible but resources will remain permanently degraded. For example, the removal of gravel as a mineral aggregate resource from a riparian area results in permanent alteration of the hydrologic regime in that area.

Other Land Uses and Land Use Procedures that Impact Resource Areas

Public Improvements

Infrastructure Facilities

Infrastructure facilities such as water and sewer pump stations, electrical substations, and water towers need to be located in or near the area where the service is provided. Although operation of existing facilities may have few adverse environmental effects, construction and maintenance practices for new basic utilities have a variety of adverse effects. These activities often create

cleared corridors which increase wind and light penetration into forest and other habitats providing opportunities for the establishment of invasive, non-native plant species. Construction often fragments wildlife habitat areas, degrades wetlands and streams, increases stormwater runoff and erosion, and reduces forest cover. Basic utility construction generally has the same effects as those described for housing. Certain types of basic utilities, such as stormwater retention areas, sediment traps, and constructed wetland pollution treatment facilities can have beneficial environmental effects if located without disruption to existing resources. However, replacement of existing resource areas with these facilities can have significant detrimental effects.

Radio and Television Broadcast Facilities

Most low-powered transmitters such as cordless telephones and citizen band radios are allowed in all zones. More powerful and larger radio, television, and cell phone broadcast facilities are allowed subject to limitations or as conditional uses within all zones. Their effects are generally the same as those of basic utilities, but with less impervious surface and human activity impacts and greater adverse visual impacts.

Rail Lines and Utility Corridors

Rail lines and utility corridors are allowed as conditional uses in all residential and commercial zones, and are allowed by right in all employment and industrial zones. Their effects are the same as basic utilities, except that construction of rail lines often requires substantial excavation and fill to meet 0-3 percent slope standards. Generally, the additional grading results in a greater area of resource disturbance and greater degradation of soil, vegetation and both terrestrial and aquatic habitat resources. In addition, most rail corridors involve extensive chemical vegetation management with a potential for ground and surface water impacts.

Land Use Procedures

Comprehensive Plans, Specific Development Plans, Refinement Plans

Specific development plans, refinement plans and similar planning documents may allow development patterns that conflict with natural resource sites. Specifics contained within these plans may give directives for development that can not be understood by examining zoning rules alone.

Subdivisions, Partitions, and Property Line Adjustments

These are procedures that establish lots or relocate property lines within any zone. While the act of adjusting or creating lot lines does not directly impact resources, the new or modified lots may allow more conflicting uses than the lots from which they were created because of the additional housing or other development that can occur on these lots.

7.0 DEFINING IMPACT AREAS FOR RESOURCE SITES

Under the standard approach, Goal 5 rules require communities to identify an impact area for each significant natural resource site. The impact area is defined as the “geographic area within which conflicting uses could adversely affect a significant Goal 5 resource” (OAR 660-23-010(3)). The impact area, together with the boundaries of the resource site itself, defines the geographic limits within which to conduct the ESEE analysis.

Local governments have substantial discretion in defining impact areas. Goal 5 rules don’t provide direction about how communities are to identify these areas. LUBA has acknowledged this process can be somewhat subjective. *Palmer v. Lane County*, 29 Or LUBA 436 (1995). Impacts on air, water, surface water quality, noise and fish and wildlife have all been considered as factors that may help determine the impact area. The context of the resources may influence how impact areas are defined. For example, impact areas in developed urban areas may be limited to adjoining properties within a certain distance. Local jurisdictions are free to choose which impacts they consider most important.

In many Oregon cities and towns, impact areas have been defined as either a uniform distance buffer, or an area bordered by identifiable topographic features, or simply the adjacent properties. The impact area must be specific enough to be measured and mapped and should be justified by facts such as soil type, slope, and vegetation. Since the ESEE analysis is conducted for both the resource and the impact area, local governments may decide to implement a program to achieve Goal 5 that encompasses the resource area and the impact area in order to protect identified Goal 5 resources.

Springfield has chosen to define the impact areas for resource sites based upon the functions those sites serve. Staff researched available literature to establish the natural functions of wetlands and riparian areas. This research centered upon work recently for the City of Portland, Metro and on reports prepared by various communities in the state of Washington which are required to prepare statements of “best available science” on which to base their protection policies for riparian and wetland areas. While Springfield differs in many ways from the Portland metropolitan area, the general discussion of the functions and values of natural resource types is valid in Springfield.

7.1 Impact Areas Defined by Resource Functions

A broad range of recommended buffer widths, some of which are based on, or expressed in terms of linear distances, site-potential tree height (SPTH) and floodplains, can be found in the literature. This range reflects a diversity of management goals, social values, land ownership, site conditions, and study methodologies. To complicate matters further, many of the studies focused on riparian and wetland functions in a rural forest setting as opposed to an urban setting. This section summarizes frequently cited studies and the buffer widths recommended to maintain specific riparian and wetland functions (see Table 2).

7.2 Riparian Functions

Nearly all of the scientific literature and literature reviews are written from a perspective of riparian functions and widths necessary to provide fully functioning natural pathways in forested areas (May 2002, Pollack and Kennard 1998; Knutson and Naef 1997; Spence *et al.* 1996; FEMAT 1993; Thomas *et al.* 1993; Budd *et al.* 1987; Harmon *et al.* 1986). Much of the literature on riparian function in particular has investigated the results of tree harvesting in forests, or the effects of various agricultural practices. While these types of literature and summary reviews must be approached with caution when evaluating riparian functions and reasonable function potential under urban constraints, they are useful in describing riparian functional processes that allow extrapolation to the urban condition.

Organic Inputs and Food Web

The dominant contribution of riparian vegetation to the food web is *allocthonous* inputs (predominately fine litterfall-leaves, needles, bark, cones, and fine wood) that fall directly into the stream. *Allocthonous* inputs (inputs not in their place of origin) can be significant even in incised reaches (Kauffman 2000). The literature reviewed generally agreed that the first 100-feet adjacent to a stream plays an important role in maintaining food web functions. Spence *et al.* (1996) recommended buffers extending a distance equal one site potential tree height from the stream to maintain food web functions, with one site potential tree being equal to 170-foot in western Oregon forests. Maintaining 100-foot to 170-foot buffers is considered the minimum width required to help maintain particulate organic debris contributions that in turn help support healthy and diverse *benthic* communities.

Channel Dynamics

To maintain channel dynamics, buffer areas ranging 65 to 250 feet wide, or the 100-year floodplain are recommended in unconstrained reaches. Spence *et al.* (1996) recommends buffers equivalent to one site potential tree height (approximately 170 feet) to protect the riparian elements that stabilize stream banks, but also recommends that potential recruitment of wood from outside the riparian zone be considered. To maintain a supply of large and small wood (necessary to retain channel complexity), Pollock and Kennard (1998) also recommend basing riparian buffers on the site potential tree height, which they define as 105 to 250 feet in Western Oregon forests. To protect the channel migration zone they recommend a buffer equal to the 100-year floodplain.

Water Quality

To protect the water quality functions of riparian areas, a range of buffer widths, extending 10 to 860 feet on either side of the stream have been suggested in the literature. Recommended riparian buffer widths varied depending on the material being sampled or regulated, the topography of the area, and the character of the vegetation. Riparian buffers are considered most effective in controlling sediments in sheet flow (Spence *et al.* 1996). The literature proposing the widest corridors recommends buffers 860-feet from the stream for the removal of excess nutrients and solids produced by feedlots (Castelle *et al.* 1994). A distance of ten feet is considered appropriate to filter sand particles (Johnson and Ryba 1992 citing Wilson 1967). The

quality, composition, and structure of vegetation also has an important influence on water quality (Todd 2000; Fischer et al. 2000).

Spence et al. (1996) states, "Because of the high degree of variability in the effectiveness of buffers, we cannot draw any conclusions regarding buffer widths required for sediment" and nutrient control (Spence et al. 1996, 219). However, he also concludes that buffers designed to protect other riparian functions should be able to control sediments. The sediment and nutrient filtering functions attributed to riparian areas assumes that the runoff source, riparian area, and aquatic system are all connected. In urban environments, riparian areas can be decoupled from the runoff source; an in-depth discussion of this issue is found later in this chapter under "Riparian management issues in an urban environment."

Water Quantity

Although the literature acknowledges the importance of riparian vegetation to maintaining streamflows, little is stated about the buffer size needed to protect water quantity. However, the literature does include references relative to riparian condition and water quantity. Johnson and Ryba (1992) and Castelle et al. (1994) discuss the importance of vegetated buffers for increasing infiltration and the importance of forest vegetation and litter adjacent to the stream to reduce floodflows. The proximity and hydrologic connectivity of the floodplain and the channel is important for floodplain functions such as flood flow reduction and recharge of aquifers and wetlands (Stanford 1998; Huggenberger et al. 1998;). It should be acknowledged that conditions of the entire watershed and not just the riparian area are critical for maintaining hydrologic conditions such as streamflow and groundwater storage (Naiman et al. 1992; Bledsoe and Watson 2001; Stanford 1998; Tabacchi et al. 1998)

Microclimate

To maintain *microclimate* functions sources in the literature recommend maintaining buffers 33 to 525 feet wide. The width recommended depends on which microclimate features are of concern. On the low end of the scale Barton et al. (1985) considered 33-feet adequate for providing shade to maintain water temperature in streams in Southern Ontario, Canada. FEMAT states that microclimate is probably influenced by the width of the stream channel, topography, and the riparian area, but recommended buffers extending one to three site potential tree heights from the stream to maintain air temperature, wind speed, and humidity (FEMAT 1993). Based on their review of literature, Knutson and Naef (1997) recommend 200-525 feet to maintain localized microclimate conditions in the riparian area. Microclimate condition can also extend to side and *off channel habitat* if the riparian area is unconstrained and flood conditions are allowed to occur.

Wildlife Habitat

Riparian habitat is valuable to a broad range of wildlife species. To protect wildlife that use the riparian environment, buffers extending 10-984 feet are recommended depending on the species being protected. Most wildlife (87 percent) found in western Oregon and Washington use the riparian zone or *wetlands* during some part of their lifecycle (FEMAT 1993, citing Brown 1985:

Kauffman 2001)). Most wildlife species depend on the riparian areas as a source of water, cover, food, plant communities, optimum microclimate conditions, high edge-to-area ratios, and as migration routes (FEMAT 1993, citing Carlson 1991; Kauffman et al. 2001).

At a minimum, Castelle et al. (1994) considered ten-feet adequate for some wildlife species. In contrast, bald eagle nesting and roosting sites require 600-foot buffers (FEMAT 1993). Most wildlife species that rely on riparian habitats can be accommodated with a buffer width of one site potential tree (150 feet) or more. For example, amphibians require cool, moist conditions to maintain their respiratory functions. They also are dependent upon migratory pathways along streams. In order to meet these needs, FEMAT recommends a buffer area equal to two site potential tree (300 feet) for the protection of most riparian-dependent amphibians.

Many avian species also rely on riparian areas (Kauffman et al. 2001). Bird use, particularly nesting for songbirds, is an important function of larger riparian areas. Waterfowl spend the winter in lowland ponds, bays and rivers. Protecting overwintering habitat is critical to their well being. FEMAT citing Roderick and Miller (1991) recommends riparian buffers between 165 to 330 feet, depending on the waterfowl species. Knutson and Naef (1997) (citing Bowman and Siderius 1984, Kelsall 1989, and Vos et al. 1985) suggest 984-foot buffers to protect heron rookeries. Riparian buffers adjacent to intense land uses may need to be even larger (Castelle et al. 1994) to adequately protect the above mentioned wildlife. Friesen et al. (1995) discusses the decrease in neotropical bird diversity associated with urban sprawl. Study results indicate a clear association between the increase in homes or development with the decrease in neotropical bird diversity (Friesen et al. 1995).

By definition riparian corridors connect terrestrial and aquatic habitat, but they also connect summer and winter habitats providing seasonal migration routes for fish and wildlife. Castelle et al. (1994) states that buffers need to be larger, 10-350 feet, depending on resource needs of the species for birds, mammals, reptiles and amphibians, when adjacent to intense land uses (such as urban development). Because habitat fragmentation that results from human disturbances is a major contributor to the loss of biodiversity, restored riparian habitat which can lead to connectivity, will be an important tool not only to salmon and trout survival, but to the viability of other wildlife that are dependent on a healthy riparian environment.

7.3 General Recommendations for Riparian Corridors

Table 7-1 summarizes the buffer areas identified as being needed in various studies to maintain riparian function.

Table 7-1. Riparian Function and Impact Area

Function	Impact Area	Reference
Provides nutrient attenuation	98 ft. 100 ft.	C. W. May 2000 Castelle, et al 1994
Provide food, water, cover for fish and wildlife	100-600 ft. 328 ft.	FEMAT 1993 C. W. May 2000
Provide travel routes for wildlife movement	328 ft.	Environment Canada
Provide large woody debris for channel	1 SPTH	FEMAT 1993

Function	Impact Area	Reference
morphology, organic debris storage, and food supply.	262 ft. 1 SPTH	C. W. May 2000 Spence, et al 1996
Provides shade and helps regulate stream temperature	100 ft. 98 ft. 50-100 ft. 98 ft. 39-141 ft.	FEMAT 1993 C. W. May 2000 Castelle, et al 1994 Spence, et al 1996 Johnson and Ryba 1992
Stabilize banks and reduce sedimentation	1 SPTH 98 ft. 170 ft.	FEMAT 1993 C. W. May 2000 Spence, et al 1996
Filter and remove sediments	98 ft. 10-400 ft.	C. W. May 2000 Johnson and Ryba 1992
Reduce excess nutrients, metal contaminants, and fecal coliform.	98 ft. 100 ft.	C. W. May 2000 Castelle, et al 1994

Springfield has chosen to define riparian impact areas by using a 150-foot set distance from riparian corridor boundaries. The 150-foot impact area takes into consideration the findings of scientific literature as to the area thought needed to maintain riparian function. The 150-foot distance is also useful in that it enables staff to utilize GIS mapping and analytical tools to conduct the conflicting use analysis and other work needed to complete the ESEE analysis. The distance is also consistent with Springfield stormwater quality policy which requires site plan review for proposed development within 150-feet of certain water quality limited watercourses riparian sites.

7.4 Wetland Functions

Wetlands are integral features to Springfield's landscape. They provide important functions and for both human and biological components. Some of these functions include flood storage, groundwater recharge and water quality protection. These hydrology functions provide the attenuation of surface waters over a period of time in which the water is not only stored and slowly discharged, via surface or groundwater, but it is cleaned through natural processes driven by vegetation and elemental exchanges.

Wetlands may also act as areas of groundwater discharge where water exits the ground to be stored, cleaned and/or directed over the landscape to larger open water systems. Due to the diverse nature of wetlands role within the hydrologic cycle, they may be large or small, depressional or part of a larger riverine system.

A wetland's role to support biological and ecological functions varies within a matrix of numerous levels. Vegetation may be extremely diverse with multiple species or exist as a monoculture stand. The vegetation may be forested, scrub-shrub, emergent or submerged. Hydrologic cycles may be tidally influenced or stagnant, and everything in between. With such an array of water and vegetation combinations, the biological and ecological support opportunities far exceed what can be presented here. Habitat is provided for very important species, both ecologically and legally (i.e. listed species). Wetland usage is present by not only

residents of wetland habitat but also for upland species who may visit the wetland to forage or hunt wetland dependant species. Its users include micro invertebrates to larger mammals.

Provides a Hydrologic Control Function

Many floodplain and stream-associated wetlands absorb and store storm water flows, which reduces flood velocities and stream bank erosion. Preserving these wetlands reduces flood damage and the need for expensive flood control devices such as levees. When the storms are over, many wetlands augment summer stream flows when the water is needed, by slowly releasing the stored water back to the stream system.

Provides Diverse Fish Habitat and Wildlife Habitat

Wetlands provide essential water, food, cover, and reproductive areas for many wildlife species. For example, nearly two thirds of the commercially important fish and shellfish species are dependent upon estuarine wetland habitats for food, spawning, and/or nursery areas. Similarly, millions of waterfowl, shorebirds, and other birds depend on wetlands.

More than 43% of all species that are federally designated as endangered or threatened in the U.S. are wetland dependent for food, shelter, or breeding at some point in their life cycle. In Springfield, state and federally listed endangered, threatened and sensitive species including the Oregon Chub, Western Pond Turtle, Northern Red-legged Frog, and Fenders Butterfly, inhabit wetland areas.

Because of their high productivity, wetlands provide essential food chain support. That green scum that coats cattail stems and ankles provides food for an abundance of tiny organisms that, in turn, feed fish, wildlife, and humans.

Traps Sediment

Wetlands are natural filters for waters flowing in and through them. Meanders in a stream or tidal channels and/or the presence of wetland vegetation, slows the flow of water and suspended sediments settle to the bottom. If the sediments contain toxins, these toxins are deposited in the wetlands and buried by additional sediments. This action effectively removes potentially harmful particles from the system. Some plants and animals may take up pollutants and transform them into harmless forms, thus improving water and sediment quality. These pollutants include heavy metals, pesticides, and excess nutrients. Stormwater runoff from various land uses or municipal drainage may contain elevated amounts of pollutants. To a certain extent, wetlands will remove or transform these pollutants prior to water flowing into other aquatic systems.

Provides Nutrient Attenuation

Wetlands act as filters of pollutants, earning a reputation as "nature's sponge." Wetlands catch runoff, which is rain water that drains from the land, soaking it up before it reaches open water such as rivers or lakes. In this way, many pollutants that are in runoff, such as pesticides,

herbicides, factory wastes, or heavy metals (copper, iron, etc.) are absorbed into the wetland and do not enter the water supply.

Wetlands also act as filters of nutrients, such as phosphorous and nitrogen. If these nutrients remained in water, they would cause large amounts of algae to bloom on the surface of the water. When the algae die, they would fall to the bottom and begin to decompose. large amounts of oxygen would be used up in the process of decomposition, and there would not be enough oxygen left for the fish and other animals in the water. A forested streamside wetland can keep this from happening by removing as much as 80% of the phosphorous and 90% of the nitrogen from the water. Farm ponds and other wetlands can help rivers and lakes by filtering excess fertilizer that runs off fields and lawns.

7.5 General Recommendations for Wetland Areas

Table 7-2 summarizes the buffer areas identified as being needed in various studies to maintain wetland function.

Table 7-2. Wetland Function and Impact Area

Function	Impact Area	Reference
Provides a hydrologic control function		
Provides diverse fish habitat	50-200 ft. 200 ft.	Knutson and Naef 1997 Castelle et al. 1992
Provides diverse wildlife habitat	100-600 ft. 328 ft.	FEMAT 1993 C. W. May 2000
Traps sediment	98 ft. 10-400 ft.	C. W. May 2000 Johnson and Ryba 1992
Provides nutrient attenuation	98 ft. 100 ft.	C. W. May 2000 Castelle, et al 1994

Springfield has chosen to define wetland impact areas by using a 150-foot set distance from wetland site boundaries. The 150-foot impact area takes into consideration the findings of scientific literature as to the area thought needed to maintain wetland function. The 150-foot distance is also useful in that it enables staff to utilize GIS mapping and analytical tools to conduct the conflicting use analysis and other work needed to complete the ESEE analysis. The distance is also consistent with Springfield stormwater quality policy which requires site plan review for proposed development within 150-feet of certain water quality limited watercourses riparian sites

7.6 Conflicting Use Matrix

Tables 7-3 and 7-4 illustrates the conflicting uses that have been identified for each riparian and inventoried wetland resource site as well as the impact area associated with each site. Some resource sites appear on both the Springfield Inventory of Natural Resource Sites and the Local Wetland Inventory.

Table 7-3. Site Specific Conflicting Use Analysis: Riparian Resource Sites

Site ID	Conflicting Uses (Permitted or Discretionary Uses by Acres)				
	Residential	Commercial	Industrial	Public	Total Acres
E-39	.12	0	15.29	9.1	24.51
E-39 Impact Area	3.96	0	32.76	20.09	56.81
S-03	9.45	0	14.81	.08	24.34
S-03 Impact Area	19.74	0	27.12	1.14	48.00
S-04	.63	0	41.88	0	42.51
S-04 Impact Area	2.00	.44	31.20	.64	34.28
S-07	5.88	0	17.78	0	23.66
S-07 Impact Area	9.51	0	23.59	0	33.10
S-09	0	0	62.11	0	62.11
S-09 Impact Area	0	0	21.25	0	21.25
S-10	0	0	.9	.21	1.11
S-10 Impact Area	.77	0	4.76	2.77	8.30
S-12/13	3.69	5.60	.87	3.48	13.64
S-12/13 Impact Area	36.03	22.87	16.11	12.45	87.16
S-14	.76	0	0	1.38	2.14
S-14 Impact Area	3.05	0	0	2.34	5.39
S-17	7.07	0	13.84	11.01	31.92
S-17 Impact Area	16.11	0	25.70	5.14	46.95
S-18	3.44	0	2.94	1.13	7.51
S-18 Impact Area	39.22	0	6.63	5.94	52.29
S-20	12.28	0	2.43	0	14.71
S-20 Impact Area	34.34	0	3.88	0	37.22
S-21	0	0	11.86	0	11.86

	Conflicting Uses (Permitted or Discretionary Uses by Acres)				
Site ID	Residential	Commercial	Industrial	Public	Total Acres
S-21 Impact Area	0	0	17.08	0	17.08
S-22	13.28	0	0	0	13.28
S-22 Impact Area	33.71	0	0	0	33.71
S-24	3.52	0	0	3.11	6.63
S-24 Impact Area	19.61	0	0	15.06	34.67
WA/WB	7.53	2.94	3.27	8.39	22.13
WA/WB Impact Area	35.79	8.13	19.65	9.32	72.89
Total Acres	321.49	39.98	417.71	112.78	891.16

Table 7-4. Site Specific Conflicting Use Analysis: Springfield Local Wetland Inventory

	Conflicting Uses (Permitted or Discretionary Uses by Acres)				
Site ID	Residential	Commercial	Industrial	Public	Total Acres
M-04*	0	5.03	0	0	5.03
M-04 Impact Area	1.55	9.68	1.10	0	12.33
M-05	8.70	.42	0	0	9.12
M-05 Impact Area	18.91	.52	0	0	19.43
M-14	24.56	0	0	6.17	30.73
M-14 Impact Area	18.67	0	0	16.15	34.82
M-16A	1.33	0	0	0	1.33
M-16A Impact Area	10.27	0	0	0	10.27
M-16B	5.51	0	0	0	5.51
M-16B Impact Area	12.26	0	0	.02	12.28
M-16C	2.26	0	3.43	0	5.69
M-16C Impact	12.94	0	15.95	.05	28.94

	Conflicting Uses (Permitted or Discretionary Uses by Acres)				
Site ID	Residential	Commercial	Industrial	Public	Total Acres
Area					
M-20	0	0	.35	0	.35
M-20 Impact Area	0	0	4.52	0	4.52
M-26	.97	0	0	.85	1.82
M-26 Impact Area	3.05	0	0	2.11	5.16
M-28*	0	1.50	0	0	1.50
M-28 Impact Area	0	8.52	0	0	8.52
M-29*	.64	0	.44	0	1.08
M-29 Impact Area	4.16	0	1.72	.41	6.29
M-30	6.37	0	0	.11	6.48
M-30 Impact Area	27.30	0	0	.91	28.21
M33a	0	0	12.07	0	12.07
M33a Impact Area	3.40	0	68.67	0	72.07
W-02*	.89	0	.00	0	.89
W-02 Impact Area	2.47	0	.86	0	3.33
W-03a	1.58	0	0	0	1.58
W-03a Impact Area	10.29	0	0	0	10.29
W-04a	0	0	0	.65	.65
W-04a Impact Area	0	0	0	5.45	5.45
W-12	0	.05	0	1.10	1.15
W-12 Impact Area	2.73	1.75	0	7.50	11.98
W-16	1.70	0	.01	0	1.71
W-16 Impact Area	20.89	0	1.82	.52	23.23
W-18A	20.18	5.67	82.15	0	108.00
W-18A	30.34	7.58	98.59	0	136.51

	Conflicting Uses (Permitted or Discretionary Uses by Acres)				
Site ID	Residential	Commercial	Industrial	Public	Total Acres
Impact Area					
W-19	0	0	41.65	0	41.65
W-19 Impact Area	.06	0	53.61	0	53.67
W-20	.03	0	3.28	0	3.31
W-20 Impact Area	.75	0	10.52	0	11.27
Total Acres	254.76	40.72	400.74	42.00	738.22

*Meets criteria for “Special Interest for Protection” under the Oregon Freshwater Wetland Assessment Methodology.

8.0 Economic, Social, Environmental Energy (ESEE) Analysis

8.1 Introduction

The Conflicting Use Analysis is used to identify various land uses and activities that would conflict with significant wetland and riparian resource sites. The next step is to conduct the ESEE Analysis. This analysis provides an understanding of the trade-offs between protecting and not protecting a resource site. Through the ESEE analysis, a city or county may find that some resource sites do not merit full protection. The ESEE consequences of protecting a resource site from these conflicting uses may be so great that they outweigh the environmental benefits. In such a case, the community may decide to allow some conflicting uses. Regardless of local planning decisions, existing state and federal wetland regulations may still afford some level of protection to wetlands and streams, but these programs rarely deny fill permits outright, and mitigation measures are not infallible.

The ESEE process explores the interaction between significant resource sites, their impact areas, and conflicting uses—how each affects the other. A key component of the ESEE analysis is that considers three possibilities—full, limited, and no local protection. Recommendations for the treatment of resource sites must be derived from a clear enumeration of the likely consequences. The full protection alternative allows no conflicting uses, limited protection allows one or more conflicting uses on a limited basis, and no protection allows any conflicting uses permitted under current zoning. Under OAR 660-023-0040(5)(c), local governments cannot decide to provide “no protection” without thoroughly exploring methods to provide some protection and still allow the conflicting use to some extent.

Using the ESEE framework, a resource site analysis should explain the economic, social, environmental, and energy consequences of allowing—or not allowing—each conflicting use. The evaluation should address all the ESEE consequences, both those perceived as positive and those perceived as negative.

Some consequences are more important than others are. In general, where wetlands and riparian corridors are concerned, the focus of the ESEE analysis has most often been on the interaction between economic, social and environmental consequences, though there may be exceptions.

Combined Analysis of Riparian and Wetland ESEE Consequences

Riparian and wetland areas are often closely associated, so much so that many communities have combined their discussion of the ESEE consequences. The Springfield Inventory of Natural Resource Sites lists 14 riparian corridors that meet the significance criteria adopted by the City. Of these 14 sites, 10 appear in whole or in part on the Springfield Local Wetland Inventory. For this reason, the general discussion of ESEE consequences shall address Springfield’s wetland and riparian corridors together. Impacts which are specific to wetlands or riparian areas shall be broken out, but unless specified, the consequences shall be presumed to affect both natural features.

Urban areas, by their nature, are heavily impacted by human activities. In turn, humans are part of the ecosystem in which they live, and human welfare is ultimately depends in part on the vital services, such as shade, fresh air, and clean water, provided by natural resources. The urban growth boundary (UGB) designates a limit to physical expansion of the urban area; to contain the ecological impacts associated with urban development and to protect valuable forest and agricultural lands.

8.2 General Consequences Fully Allowing, Limiting, Or Prohibiting Land Uses (Development) That Conflict With The Beneficial Functions Of Riparian And Wetland Areas

Section 6.1 of this report provides a description of the key functions that wetlands and riparian areas provide. Fully prohibiting conflicting land uses on or near Springfield’s remaining wetland and riparian resource sites will preserve their existing functions. Fully allowing conflicting uses in Springfield’s resource areas will reduce or remove existing functions, with associated negative impacts on fish, wildlife and people. However, consequences for the broadest category—limiting conflicting uses within the resource areas—depend on the definition of “limit.”

Limiting conflicting uses implies that some limited amount of development or other conflicting use will occur in conflict with the resource areas. The consequences depend on the extent and type of land use and the resource’s ecological importance. The table below provides a general illustration of the potential environmental consequences of this decision process; actual consequences depend on the protection policies that are adopted for each resource site and the effectiveness of their implementation.

Range Of Potential Consequences Of Fully Allowing, Limiting, Or Prohibiting Conflicting Uses Within Springfield’s Locally Significant Riparian And Wetland Areas.

← Fully Allow	Limit	Prohibit →
Existing resource function greatly impaired or eliminated.	Retain the majority of resource functions with tolerable losses.	Preserve resource functions at existing levels.
Greatly increased non-native and invasive species.	Some increase in non-native species invasions	Retention of existing native plants and animals
Substantial loss of biodiversity	Some loss of biodiversity	More biodiversity
Substantial loss of riparian and wetland resource areas	Some riparian and wetland areas will be lost.	Retain existing system of streams and wetlands
Poor restoration potential	Good restoration potential	Good restoration potential
Flooding occurs with greater frequency and intensity	Some increase in flooding above current levels	Possible to restrict the flooding to present levels
Damaging soil loss and sedimentation	Increased soil loss and sedimentation	Soil loss continues at current levels
Probable loss of salmonid habitat	Some decline in salmonid habitat	Possible to retain salmonid habitat
Decreased need to expand the UGB	May need to expand the UGB into include additional natural areas.	Probable need to expand the UGB into natural areas.

Summary of Potential Tradeoffs

Allowing development (conflicting uses) in general has significant consequences for the natural function of wetland and riparian areas. The severity of the impact depends on the prevalent type of development and to a large degree on the amount of imperviousness created by that development. This section includes a summary of the potential environmental tradeoffs of allowing, limiting, or prohibiting conflicting uses. Most of the environmental consequences are similar in all types of development, the differences are highlighted below. The analysis of environmental consequences is general in nature to account for variability within types of development, and also because consequences depend on the development standards that are applied where conflicting uses are allowed to impact natural areas. Below are some general consequences associated with decisions to fully allow, limit or to prohibit conflicting uses to impact riparian and wetland areas.

Allowing Conflicting Uses

- Extensive loss of the habitat functions of riparian and wetland areas.
- Degradation of fish habitat, particularly in those streams supporting salmonid populations.
- Extensive loss of wildlife habitat and functional values (size, interior habitat, connectivity, proximity to water).
- Continued loss of native species and at-risk species; reduction in migratory songbirds
- Loss of natural areas that provide education opportunities.
- Reduced need for UGB expansion; protects habitat from urban encroachment.

Limit Conflicting Uses

- Depends on the type of standards that are adopted to govern how development occurs in proximity to riparian and wetland areas. Results may range from minimal protection to near-full protection of the natural functions of the wetland and riparian areas.
- Strong potential for restoration, mitigation and education activities to offset the negative impacts of development.
- Implementation of best management practices and low impact development standards could reduce negative impacts of development.
- Less harm to native species and fewer non-native invasive species than a decision to fully allow conflicting uses.
- Intrusion in some habitat areas will reduce the quality of other resources, especially if connector habitat is fragmented and interior habitat is reduced.
- May require UGB expansion, depending on the development standards adopted to limit the impact of conflicting uses on natural areas.

Prohibit Conflicting Uses

- Retention of some of important habitat functions and preservation of some of Springfield's best remaining riparian and wetland habitat areas.
- Provides strongest protection for streams that provide salmonid habitat
- Prevents further habitat fragmentation; preserves restoration opportunities

- Minimizes hydrologic alterations, reduces flooding, preserves water quality
- Provides breeding habitat for migratory songbirds, aquatic species habitat interior species, and other native species
- May require substantial expansion of the UGB.

The following sections discuss the ESEE consequences of allowing specific land uses to impact resource sites. The sections below will summarize the impact of 1) residential uses; 2) commercial and industrial uses; 3) public and transportation facilities; and 4) native vegetation removal and grading activities on resource sites.

8.3 ESEE Consequences of Allowing, Limiting or Prohibiting Conflicting Residential Uses

The following sections discuss the general ESEE consequences of allowing, limiting or prohibiting conflicting residential land uses (development) to impact significant wetland and riparian corridors that are the subject of this report. The analysis below addresses the likely ESEE consequences of allowing conflicting uses to impact riparian and wetland resource sites. The discussion summarizes the range of possible consequences. Not all consequences are expected to occur at every site, or even at most sites. A site-specific analysis of the likely impacts of development on each of Springfield's significant wetlands and riparian areas follows in Section 9.0.

The structure of the ESEE analysis often requires repetitive discussion of the same information and the repetitive use of the same tables which serve as a data base for the analysis. For example the text and tables used to discuss the impact of allowing development near a wetland are often the same tables and text to describe the impacts of prohibiting development, but from a different perspective. Identical copies of various tables have been inserted in the report to relieve the reader from the burden of flipping back and forth through this large document to find the information discussed in the text.

Consequences of Fully Allowing Conflicting Residential Development

Environmental Consequences

Springfield's locally significant wetlands and riparian corridors should be considered as part of a much larger ecological system of urban wetlands, stream corridors, and vegetated uplands associated with the McKenzie River and Willamette River drainage basins. The intrinsic value of any particular wetland or riparian corridor is affected by the degree of human intrusion and their connection with other natural resources.

Wetlands and riparian areas contribute directly to decreased flooding potential and to improved water quantity and quality, fish and wildlife habitat, and groundwater recharge. They decrease flooding potential by providing flood water storage, dissipating the force of moving water, and by allowing storm water to seep gradually into the ground rather than moving rapidly over the surface and increasing flood damage and erosion.

Wetland and riparian vegetation improve water quantity and quality in a number of ways. Vegetated soils allow water to filter downward to the groundwater reservoir, adding volume to surface waters during low flow. Riparian vegetation pre-filters sediments and slows the flush of water into wetlands and receiving streams. Wetlands further allow sediment to settle out or be trapped by vegetation before it reaches streams. Large woody debris in riparian channels slows the velocity of stream flow and provides refuge for fish. Natural vegetation also absorbs hazardous chemicals and heavy metals, reducing water pollution. Thus, loss of wetlands and riparian vegetation caused by low-density residential development contributes to flooding and reduces the quantity and quality of ground and surface water.

Varying levels of plant and animal diversity characterize wetlands and riparian areas. These areas provide improved fish and wildlife habitat by contributing to an integrated stream corridor ecosystem, which provides food, water, shelter, breeding and rearing areas, and water for aquatic and terrestrial animals and birds. Reductions in the quality, quantity and availability of food, water, cover and living space all have significant detrimental effects on wildlife. Where wetlands and riparian areas are intact and connected to other natural resources, they provide essential travel corridors for wildlife.

When residential development (including buildings, roads and driveways, and lawns and gardens) replaces native vegetation, the value of the land for habitat decreases dramatically (See Vegetation Removal and Grading Supplemental ESEE Analysis). Residential development in natural areas does not necessarily eliminate all fish and wildlife habitat, but it changes the habitat in a way that decreases biodiversity, because more aggressive and adaptable species tend to survive and displace less adaptable species under changed ecological circumstances.

Residential development in resource areas replaces native vegetation with impervious surface area, and contributes to flooding, reduced groundwater recharge, and increased sediment and nutrient loading (from lawns, gardens, household wastes). The result is decreased water quantity and quality, and diminished fish and wildlife habitat.

If full development was allowed, then the qualities, which make each inventoried resource site significant, would be lost. Depending on the characteristics of the specific site, the environmental impacts from unrestricted development could include loss of wildlife habitat, fish habitat, water quality function, or hydrologic control function; and/or loss of rare plant or animal species.

Economic Consequences

The economic consequences of replacing significant resource sites with unrestricted residential development are less obvious, but are worthy of consideration. By allowing unrestricted development of a wetland or riparian resource site, development costs could be reduced. Each wetland in this study has been found to be a “locally significant wetland” (LSW) using the Oregon Freshwater Assessment Methodology. OAR 660-023-0100 requires local governments to adopt programs of protection for these wetlands and to notify the Oregon Division of State Lands when a development is proposed that affects a significant wetland. Riparian corridors are afforded similar state and federal protection. Local regulations enacted in addition to those levied by state and federal agencies could increase costs for both the developer and the City.

Economic consequences vary considerably based on individual site conditions, as noted in the discussion of the economic consequences of conserving resource sites below.

From the developer's point of view, local regulations protecting resource sites could increase design costs and the loss of developable land. Site design to avoid resource impacts often requires additional consultant time and complicates subdivision applications. The subdivision process begins to take on the character of a more complicated and time consuming master planning process.

Local government regulation of resource sites could also affect the number, location and type of dwelling units that can be built in resource areas. This could be detrimental to more traditional developers who build to meet the demands of the local housing market. If the market (or the developer's perception of the market) is limited to large single-family homes on large lots, then additional local regulation of resource sites could mean the difference between a development "penciling out" or not, at any given point in time.

On the other hand, there are a number of less obvious economic consequences that need to be considered. First, wetlands and riparian areas can add value to developments -- both for neighbors and for purchasers of lots or units in the development. Development that destroys a resource site could have the effect of decreasing neighboring property values and reducing the sales price of lots and houses in new development, particularly if the site has aesthetic values or is a passive recreational amenity.

Second, local governments and property owners face potential increases in storm water management, flood control and federally mandated water quality improvement costs as wetlands and riparian areas are developed. Wetlands and riparian corridors should be viewed as part of the storm water management system; often, when these resources are destroyed, their functions must be recreated through artificial detention and water quality ponds, at considerable public expense. Springfield is facing major costs in meeting federal NPDES permitting requirements; costs that could increase if wetland and riparian water quality functions are lost.

Third, there could be a negative economic value by not providing a clear and objective *local* process for resolving development/wetland conflicts. If the local, review process is not clearly spelled out in the Springfield Development Code, the uncertainty and delay costs could increase for everyone involved.

Social Consequences

The social consequences of allowing unrestricted development of significant resource sites would be mixed. On the positive side, housing costs could be reduced, assuming that the developer passes on potential development savings to the consumer. By increasing the amount of buildable land inside the Springfield UGB, expansion of the UGB on to farm and grazing land could be slightly delayed. Out-of-direction travel to avoid the wetland, and associated pollution and traffic impacts could be slightly reduced, assuming that subdivisions in the future would otherwise be designed in a "grid" pattern.

The negative side of unrestricted residential development is more compelling. Wetlands and riparian corridors usually add amenity value to residentially developed land. Properly designed protections would only marginally reduce the amount of buildable land. Social consequences (lost open space and views) would be adverse as a result of developing the wetland area, which could otherwise be used as open space for the residential development. Resource sites provide educational opportunities for those living near them, which would be lost. They also provide opportunities for urban quiet and solitude, the lack of which has adverse social consequences.

Energy Consequences

Energy consequences of unrestricted residential development of resource areas are mixed and difficult to assess. Assuming standard subdivision practices, the results of building over wetland and riparian corridors could be more efficient use of residential land, which could prevent premature expansion of the UGB, higher urban densities, more efficient use of infrastructure, shorter travel distances and less out-of-direction travel.

On the negative side, wetland and riparian vegetation has a moderating effect on climate. Trees provide shade that cools buildings in the summer and serve as a windbreak in the winter. At a macro level, plants absorb sunlight and transpire during the growing season, slightly reducing ambient air temperatures. Wetlands also provide local recreational opportunities, thus reducing the need to drive for outdoor experiences. Thus, loss of resource area vegetation would have some adverse energy consequences.

Consequences of Prohibiting Conflicting Residential Development

This portion of the ESEE analysis looks at the impacts of prohibiting the conflicting (residential) use on the wetland site itself and appropriate impact area, thus conserving a significant wetland resource site.

Environmental Consequences

The environmental functions of wetlands and riparian corridors described in Section 6.1 would be retained by conservation of Springfield's inventoried resource sites. These functions would be largely retained by prohibiting development on and near these sites. Thus, the environmental consequences of prohibiting conflicting residential uses include preservation of wildlife habitat, fish habitat, water quality function, and/or hydrologic control function; and/or preservation of rare plant communities, federal or state-listed species, or locally unique native plant communities.

Economic Consequences

It is useful to look at the economic consequences of fully protecting the significant wetland and riparian resource sites from different points of view. Often, impacts are less significant at the study area level than for the individual property owner. The ESEE analyses for resource sites in this study addresses the special characteristics of wetlands and riparian resource sites in relation to property owner interests.

Study Area Level

Table 8-1 shows that Springfield's inventoried wetlands and riparian resource sites cover about 133 acres of land (developed and undeveloped) that is zoned for residential use. When the 150-foot impact area is added, the total area is about 567 acres. Keep in mind that the 150-foot impact area is not a buffer. The impact area is based on best available science, and defines the distance from a resource site within which development is likely to have an ecological impact. Various studies cite as little as 25 feet to more than 400 feet in describing the distance within which development could affect riparian and wetland function. The 150-foot impact area represents a middle ground that is supportable in the context of an urban environment. State planning rules require cities to define impact areas and describe the Economic, Social, Environmental and Energy (ESEE) consequences of prohibiting, limiting and allowing conflicting uses to impact riparian and wetland resource sites.

Table 8-1. Wetland and Riparian Areas Affecting Lands With Residential Zoning

Site Type	LDR	MDR	HDR	*Total Acres
Wetland Acres	70.52	4.15	0	74.67
Riparian Acres	45.16	11.86	1.18	58.20
*Total Acres	115.68	16.01	1.18	132.87
150-Foot Impact Areas				
Wetland Impact Areas	169.04	11.86	0	180.9
Riparian Impact Areas	200.91	45.92	5.98	252.81
*Total Acres	369.95	57.78	5.98	433.71
Grand Total	485.63	73.79	7.16	566.58
*Some riparian sites also appear on the Local Wetland Inventory. These lands are counted twice in the totals shown on each of the tables in this section.				

An analysis of the economic consequences of prohibiting conflicting residential development requires consideration of the impacts on vacant land that can be feasibly developed in the future. Most of Springfield's wetlands and riparian corridors are already bounded by development. Of the 567 acres mentioned above, only about 250 acres are vacant. About 25 percent of the vacant wetland and riparian acreage consists of small fragments of land that are often not developable. For the purpose of this study, vacant lots that are ¼ acre or larger are considered as feasible for infill development. Table 8-2 shows that the total acreage (including impact areas) for all vacant lots that are ¼ acre or larger is about 194 acres.

Table 8-2. *Vacant Wetland and Riparian Areas ¼ Acre or Larger

Site Type	LDR	MDR	Total Acres
Wetland Acres	40.48	1.09	41.57
Riparian Acres	16.75	6.46	23.21
Total Acres	57.23	7.55	64.78
Wetland Impact Area Acres	62.26	2.2	64.46
Riparian Impact Area Acres	46.97	17.93	64.90
Total Acres	109.23	20.13	129.36

Grand Total	166.46	27.68	194.14
*Vacant lands were identified through the use of property class codes which are used by the Lane County Assessor's Office for taxation purposes.			

Table 8-3 shows that about 38 acres of underutilized land are located within the resource areas (including impact areas). Underutilized parcels include single family homes on parcels larger than ½ acre that could be subdivided and built at higher densities in the future. Underutilized acreage is often cited as a potential supply of developable land. There is disagreement about counting this land as buildable given the uncertainty about whether the land will become available for future development. This acreage is noted, but for the purposes of this study is not counted in to the potential loss of development potential.

Table 8-3. Underutilized Residential Land Associated with Resource Areas

Site Type	LDR	MDR	Total
Underutilized Wetland Acres and Impact Areas	19.04	.52	19.56
Underutilized Riparian Acres and Impact areas	17.94	.69	18.63
Total	36.98	1.21	38.19
*Underutilized land was computed by identifying existing single family homes located on lots that are ½ acre or larger. Leaving ¼ acre for the existing home, it is assumed that in the future, land in excess of that could be subdivided and additional residential units built. The figures above show total acreage within the impact area and the acreage of the parcels associated with the resource sites.			

Table 8-4. Potential Dwelling Unit Capacity Affected by Prohibiting Conflicting Residential Uses

Site Type	LDR	Potential Dwelling Units @ 4 units per gross acre	MDR	Potential Dwelling Units @ 12 units per gross acre	Total Potential Dwelling Units
Wetland Acres	40.48	162	1.09	14	176
Riparian Acres	16.75	67	6.46	76	143
Total Acres	57.23	229	7.55	90	319
Wetland Impact Acres	62.26	249	2.2	26	275
Riparian Impact Acres	46.97	188	17.93	215	403
Total	109.23	437	20.13	241	678
Grand Total	166.46	666	27.68	331	997

Fully protecting residential development in wetlands and riparian areas and their associated impact areas could mean the loss of about 666 single family units within the Springfield UGB. This is a worst case scenario, and assumes that no development could occur within the impact areas and that developers could not take advantage of the cluster development provisions of the Springfield Development Code that allow developers to transfer density (i.e. lost dwelling units) from land that is set aside to protect resource lands to other areas on the site.

Prohibiting development within the just the resource areas but allowing development in the impact areas would reduce the loss to about 229 single family units. The 1999 Eugene-Springfield Metropolitan Area Residential Land and Housing Study provided an inventory of buildable residential lands. The Study did not count the wetland or riparian areas that are part of this study in their inventory. The sites in this study were counted as not buildable and not added into the buildable lands inventory.

At the study area level, the economic consequences of *avoiding* wetlands on Medium Density Residential properties would mean the loss of about 331 multi-family units if both resource and impact area acreage were fully protected. This loss falls to 90 units if just the resource sites themselves are protected and impact areas were allowed to be developed.

Property Owner Impact

From the property owner's point of view, the local regulations that *prohibit* development within wetlands and their impact areas, without density transfer, usually mean a loss of property owner's ability to develop the entire site for residential use. Although DSL often restricts development on wetlands and in certain riparian corridors, current DSL rules do not limit development within impact areas.

Positive Economic Consequences

On the other hand, there are positive economic consequences associated with resource conservation. First, several referenced studies discussed demonstrate that wetlands and riparian areas can add value to developments—both for neighbors and for purchasers of lots or units in the development. Conserving resource sites through density transfer and thoughtful design would probably increase neighboring property values as well as the sales price of lots and houses in new development.

Second, potential costs for stormwater management, flood control and federally mandated water quality improvement programs may decrease if wetlands and riparian areas are not developed. Wetlands and riparian corridors should be viewed as part of the storm water management system; often, when these resource sites are destroyed, their functions must be re-created through artificial detention and water quality ponds, at considerable public and/or private expense. Springfield is facing major costs in meeting federal NPDES permitting requirements, costs that could increase if wetland water quality functions are lost.

Third, there may be a positive economic value by providing a clear and objective *local* process for resolving development/resource conflicts. If the local review process is clearly spelled out in the Springfield Development Code, the uncertainty and delay costs could decrease for everyone involved.

Social Consequences

The social consequences of fully protecting wetland and riparian resource sites in this category would be mixed. On the negative side, housing costs are likely to increase, as the supply of buildable land within the UGB decreases, assuming that the developer passes on potential development savings from cluster housing to the consumer. Without density transfer, the UGB could need to expand prematurely, thus increasing travel times and lost leisure time.

On the other hand, resource sites usually add amenity value to residentially developed land. Social consequences (open space, views, more affordable cluster housing, better urban design) would be positive as a result of conserving the resource area, which could be used as open space for the residential development. Wetlands and riparian areas provide educational opportunities for those living near them, which would be maintained. These areas also provide opportunities for urban quiet and solitude, which has positive social consequences.

Energy Consequences

Energy consequences of full wetland and riparian protection are also mixed. Without density transfer provisions, there could be significant loss of housing unit potential, and premature UGB expansion. This could result in increased vehicle miles traveled and other impacts associated with “urban sprawl.” Public transportation options would also be less attractive. Full protection of wetlands also makes a grid street system more difficult to achieve, with further adverse impacts on energy consumption.

On the positive side, wetland and riparian vegetation has a moderating effect on climate. Where trees are present, they provide shade that cool buildings in the summer and serve as a windbreak in the winter. Less impervious surface means less summer heat. At a macro level, plants absorb sunlight and transpire during the growing season, slightly reducing ambient air temperatures. Wetlands also provide local recreational opportunities, thus reducing the need to drive for outdoor experiences. Thus, conservation of wetland vegetation would have some positive energy consequences.

Consequences of Limiting Conflicting Residential Development

This portion of the ESEE analysis looks at the impacts of limiting conflicting residential uses on wetland and riparian sites. As mentioned above, the consequences of limiting conflicting uses depends on the measures used to “limit” impacts. The proposed program of protection for riparian and wetland corridors would establish 25-foot setbacks from resource sites (50-75 foot setbacks from large rivers and fish-bearing streams such as the Willamette River). Low impact development strategies will be employed when building within 150-feet of a resource site. Public facilities and street improvements would be allowed to impact resource sites and their impact areas after considering alternatives and impact reduction standards. Replacement and expansion of existing structures would also be allowed, subject to mitigation standards. Density transfer would be encouraged from resource sites and their impact areas, to buildable land on the same development site. Springfield’s Development Code allows for “cluster development” as a means of density transfer when protecting resource lands. Hardship variances shall be granted to

property owners who land would be rendered not buildable by the application of the setbacks and standards described above

Environmental Consequences

Limiting conflicting residential development will largely retain the wetland and riparian functions that are described in Section 6.1. These values would be retained, in part, by setbacks that would limit development on or near resource sites. Thus the environmental impacts of prohibiting conflicting uses include preservation of wildlife habitat, fish habitat, water quality function, and/or hydrologic control function; and or preservation of rare plant communities, federal or state listed species, or locally unique native plant communities. Employing low impact development standards within the impact area will help preserve site vegetation and the hydrology of affected riparian and wetland sites.

Economic Consequences

The section below discusses the economic consequences of limiting the impact of conflicting uses on significant wetland and riparian resource sites at both the study area and property owner levels. Often, impacts are less significant at the study area level than for the individual property owner. The ESEE analysis addresses the characteristics of the resource site in relation to property owner interests.

Study Area Level

Springfield's inventoried wetlands and riparian resource sites cover about 133 acres of land (developed and undeveloped) that is zoned for residential use. When the 150-foot impact area is added, the total area is about 567 acres. Keep in mind that the 150-foot impact area is not a buffer. The impact area is based on best available science, and defines the distance from a resource site within which development is likely to have an ecological impact. State planning rules require cities to define such impact areas and describe the Economic, Social, Environmental and Energy (ESEE) consequences of allowing conflicting uses to impact natural resource sites.

Table 8-5 Wetland and Riparian Areas Affecting Lands With Residential Zoning

Site Type	LDR	MDR	HDR	*Total Acres
Wetland Acres	70.52	4.15	0	74.67
Riparian Acres	45.16	11.86	1.18	58.20
*Total Acres	115.68	16.01	1.18	132.87
150-Foot Impact Areas				
Wetland Impact Areas	169.04	11.86	0	180.9
Riparian Impact Areas	200.91	45.92	5.98	252.81
*Total Acres	369.95	57.78	5.98	433.71
Grand Total	485.63	73.79	7.16	566.58
*Some riparian sites also appear on the Local Wetland Inventory. These lands are counted twice in the totals shown on each of the tables in this section.				

Table 8-6 *Vacant Wetland and Riparian Areas ¼ Acre or Larger

Site Type	LDR	MDR	Total Acres
Wetland Acres	40.48	1.09	41.57
Riparian Acres	16.75	6.46	23.21
Total Acres	57.23	7.55	64.78
Wetland Impact Area Acres	62.26	2.2	64.46
Riparian Impact Area Acres	46.97	17.93	64.90
Total Acres	109.23	20.13	129.36
Grand Total	166.46	27.68	191.14
*Vacant lands were identified through the use of property class codes which are used by the Lane County Assessor's Office for taxation purposes.			

An analysis of the economic consequences of prohibiting conflicting residential development requires consideration of the impacts on vacant land that can be feasibly developed in the future. Most of Springfield's wetlands and riparian corridors are already bounded by development. Of the 567 acres mentioned above, only about 250 acres are vacant. About 25 percent of the vacant wetland and riparian acreage consists of small fragments of land that are often not developable. For the purpose of this study, vacant lots that are ¼ acre or larger are considered as feasible for infill development. The total acreage (including impact areas) for all vacant lots that are ¼ acre or larger is about 191 acres.

About 38 acres of underutilized land are located within the resource areas (including impact areas). Underutilized parcels include single family homes on parcels larger than ½ acre that could be subdivided and built at higher densities in the future.

Table 8-7. Underutilized Residential Land Associated with Resource Areas

Site Type	LDR	MDR	Total
Underutilized Wetland Acres and Impact Areas	19.04	.52	19.56
Underutilized Riparian Acres and Impact areas	17.94	.69	18.63
Total	36.98	1.21	38.19
*Underutilized land was computed by identifying existing single family homes located on lots that are ½ acre or larger. Leaving ¼ acre for the existing home, it is assumed that in the future, land in excess of that could be subdivided and additional residential units built. The figures above show total acreage within the impact area and the acreage of the parcels associated with the resource sites.			

At the study area level, the economic consequences of *limited protection* on resource sites and their respective buffers on *vacant* residential properties can be measured in terms of acres of land lost for development. The proposed protection program would place a development setback on significant wetlands and riparian corridors. Those riparian and wetland areas identified as Water Quality Limited Streams and or tributaries are already subject to 50-foot or 75-foot setbacks. The proposed protection program would apply the same 50 and 75-foot setbacks on wetlands and riparian corridors that are already applied by stormwater quality regulations adopted by the City of Springfield. The program would also require low impact development strategies to be employed for new development within 150 feet of resource sites.

Table 8-8 below shows the gross residential acreage impacted by the proposed setback protections with no consideration for how the development design might reduce those impacts. If the recommended setbacks are adopted, about 21.55 acres of property affected by wetlands and 31.79 acres of property affected by riparian areas would be lost to development. The total potential impact is about 53.34 acres.

The true acreage lost will depend upon the arrangement of lots and public infrastructure. For example, the acres lost to setbacks may be reduced by placing required stormwater facilities within those setbacks. The rear yards of single family lots in a subdivision could be arranged to back up to resource areas. The setbacks would become part of the backyard for many new homes.

As mentioned above, 50 and 75-foot setbacks are already applied to many wetlands and riparian sites through stormwater quality protections that are already in place. The affect of the program of protection recommended in this study adds a 25-foot setback to those streams and wetlands not covered by the stormwater protections. The 25-foot setbacks shown on Table 8-8 below would be applied to the remaining significant wetlands and riparian corridors. The 25-foot setback for development would remove about 10.54 acres from wetland properties and 3.64 acres from riparian properties.

The program would also require low impact development strategies to be employed for new development within 150 feet of remaining sites.

**Table 8-8. Residential Wetland and Riparian Acreage
within Proposed Protection Setbacks**

Setback Distance	Vacant LDR Acres	Vacant MDR Acres	Total Acres
Wetland Setbacks			
25 foot	9.95	.59	10.54
50 foot	9.4	2.73	12.13
75 foot	4.97	4.15	9.12
Total	24.32	7.47	31.79
Riparian Setbacks			
25 foot	3.42	.22	3.64
50 foot	6.06	2.73	8.79
75 foot	4.97	4.15	9.12
Total	14.45	7.1	21.55
Grand Total	38.77	14.57	53.34

**Table 8-9. Residential Wetland and Riparian Acreage
within Proposed Protection Setbacks**

Setback Distance	Vacant LDR Acres	Potential Dwelling Units @ 4 units per gross acre	Vacant MDR Acres	Potential Dwelling Units @ 12 units per gross acre	Total Units
Wetland Setbacks					
25 foot	9.95	40	.59	7	47
50 foot	9.4	38	2.73	33	71
75 foot	4.97	20	4.15	50	70
Total	24.32	98 units	7.47	90 Units	188
Riparian Setbacks					
25 foot	3.42	14	.22	3	17
50 foot	6.06	24	2.73	33	57
75 foot	4.97	20	4.15	50	70
Total	14.45	58 Units	7.1	86 Units	144
Grand Total	38.77	156 Units	14.57	176 Units	332 Units

Table 8-9 shows the impact of recommended setbacks on the capacity to site new dwelling units. The proposed protection setbacks would reduce the capacity to site 156 single family homes and about 176 multi-family units.

Local protection programs are required by state law to grant a variance to property owners whose property would be rendered unbuildable by such setbacks or other protection policies. The proposed protection plan also offers the flexibility of locating required stormwater detention facilities within setback areas which will further reduce the true impact of protection measures on property owners.

From the property owner and developer's point of view, an adopted protection program will provide greater certainty regarding site development. Although buildable area would be reduced, developing outside the 25-75 foot setbacks generally negates the cost imposed by conducting formal delineations. If, on the other hand, a developer were to propose limited development within a wetland or riparian setback, a resource delineation (and DSL concurrence in this delineation) would be required.

The Springfield Development Code allows “cluster development,” a form of density transfer, to allow a developer or property owner, to secure most of the value that might be lost through protection of a resource site. The value of a cluster-housing unit may not be the same as a single-family housing unit on a 5,000 square foot lot. However, well designed cluster developments have proven to be very marketable in the Eugene Springfield area (the Arbors and Cold Springs developments are two examples). By allowing more dwelling units to be sited in a smaller location, the cost per unit for infrastructure can be reduced or spread across more units. In some cases, cluster dwellings can be marketed as affordable housing or as first homes.

Springfield's Development Code provision for cluster development at least allows the *option* of density transfer to avoid loss of property value when protecting resource sites.

Positive Economic Consequences

There are positive economic consequences associated with resource conservation. First, referenced studies demonstrate that wetlands and riparian areas can add value to developments — both for neighbors and for purchasers of lots or units in the development. Conserving wetlands through density transfer and thoughtful design would probably increase neighboring property values as well as the sales price of lots and houses in new development.

Second, potential costs for storm water management, flood control and federally mandated water quality improvement program may decrease if wetlands and riparian areas are not developed. These resource sites should be viewed as part of the storm water management system. Often, when wetlands and riparian corridors are destroyed, their functions must be recreated through artificial detention and water quality ponds, at considerable public expense. Springfield is facing major costs in meeting federal NPDES permitting requirements; costs that could increase if wetland and riparian water quality functions are lost. It is conceivable that long term, flood insurance rates could also increase as flood studies revise flood plain boundaries in the face of increasing urban runoff.

Third, there could be a positive economic value by providing a clear and objective *local* process for resolving development/wetland conflicts. If the local, review process is clearly spelled out in an adopted protection program and implemented in through the Springfield Development Code, the uncertainty and delay costs could decrease for everyone involved.

Social Consequences

The social consequences of fully protecting wetland and riparian resource sites in this category would be mixed, but are largely positive. On the positive side, housing costs could be reduced, assuming that the developer passes on potential development savings from cluster housing to the consumer. Out-of-direction travel to avoid resource sites, and associated pollution and traffic impacts could be slightly increased, although thoughtful design can usually avoid this problem. Density transfer as allowed in the Springfield Development Code provides opportunities to mitigate, or even reverse, negative social consequences, through clustering of development and integrating wetlands into the overall design of the residential development.

Wetlands and riparian corridors usually add amenity value to residentially developed land, and would only marginally reduce the amount of buildable land. Social consequences (open space, views, more affordable cluster housing, better urban design) would be positive as a result of conserving the wetland area, which could be used as open space for the residential development. Resource sites provide educational opportunities for those living near them, which would be maintained. They also provide opportunities for urban quiet and solitude, which has positive social consequences. The OFWAM analysis that was conducted on each wetland site describes some of the social qualities of each wetland in this category that would be conserved through

planned residential development and density transfer. That report includes specific measures for educational potential, visual/aesthetic quality, and recreational opportunities. The social consequences of conserving resources sites are retention of the qualities that help make each wetland and riparian area *significant*.

Energy Consequences

Energy consequences of resource conservation are also mixed, but are largely positive. With density transfer provisions, wetlands and riparian corridors could be conserved without major loss of housing unit potential, and without significant impact on the Springfield UGB. Higher urban densities could be achieved, resulting in more efficient use of infrastructure, shorter travel distances, and reliance on less energy consumptive modes of travel.

Wetland and riparian vegetation can have a moderating effect on neighborhood climate. Trees provide shade that cools buildings in the summer and serve as a windbreak in the winter. At a macro level, plants absorb sunlight and transpire during the growing season, slightly reducing ambient air temperatures. Resource sites can also provide local recreational opportunities, thus reducing the need to drive for outdoor experiences. Thus, conservation of local resource sites could have additional positive energy consequences.

8.4 ESEE Consequences of Allowing, Limiting or Prohibiting Conflicting Commercial and Industrial Uses

The following sections discuss the general ESEE consequences of allowing, limiting or prohibiting conflicting commercial and industrial land uses (development) to impact significant wetland and riparian corridors that are the subject of this report. The analysis below addresses the likely ESEE consequences of allowing conflicting uses to impact riparian and wetland resource sites. The discussion summarizes the range of possible consequences. Not all consequences are expected to occur at every site, or even at most sites. A site-specific analysis of the likely impacts of development on each of Springfield's significant wetlands and riparian areas follows in Section 9.0.

The structure of the ESEE analysis often requires repetitive discussion of the same information and the repetitive use of the same tables which serve as a data base for the analysis. For example the text and tables used to discuss the impact of allowing development near a wetland are often the same tables and text to describe the impacts of prohibiting development, but from a different perspective. Identical copies of various tables have been inserted in the report to relieve the reader from the burden of flipping back and forth through this large document to find the information discussed in the text.

Information has been derived from the Lane County Assessor's records to identify commercial and industrial land that is vacant or has re-development potential. The Assessor's property class codes provide information about whether a parcel is developed or vacant. This method of identifying vacant property is not without error, but it provides a reasonable assessment of the impacts. In some cases, land which appears vacant around an industrial site is in fact intended to distance the site from other nearby uses or is land being held for future expansion of the existing

use. Errors in this process will be on the side of over estimating the impact of the resource acreage on commercial and industrial lands.

Consequences of Fully Allowing Conflicting Commercial/Industrial Development

Table 8-10 summarizes the potential conflict between future commercial and industrial development and Springfield's resource areas. The table shows the acreage of the resource areas as well as the adjacent 150-ft. impact areas. Table 8-11 shows the amount of vacant commercial and industrial land that is affected by resource acreage. About 335 acres of commercial and industrial land lay within the boundaries of Springfield's wetland and riparian resource sites. Of that, about 132 acres is vacant. The impact areas around these resource areas cover about 538 acres of land of which about 159 acres is vacant.

**Table 8-10. Wetland and Riparian Resource Areas Affecting Lands
With Commercial and Industrial Zoning**

Site Type	CC	MRC	NC	GO	HI	LMI	CI	SHI	BK	QM	*Total Acres
Resource Areas											
Wetland Acres	12.25	0	.42	0	30.51	71.61	.35	11.53	24.08	2.46	153.21
Riparian Acres	2.78	5.6	0	.16	87.03	41.09	13.84	1.48	29.73	0	181.71
Total Acres	15.03	5.6	0.42	0.16	117.54	112.7	14.19	13.01	53.81	2.46	334.92
150-Foot Impact Areas											
Wetland Impact Areas	27.58	0	.47	0	113.31	72.12	5.01	33.18	15.83	9.7	277.2
Riparian Impact Areas	7.49	22.58	0	1.37	88.58	97.23	25.7	3.96	10.54	3.72	261.17
*Total Acres	35.07	22.58	0.47	1.37	201.89	169.35	30.71	37.14	26.37	13.42	538.37
Grand Total	50.10	28.18	.89	1.53	319.43	282.05	44.36	50.15	80.18	15.88	873.29

*Some riparian sites also appear on the Local Wetland Inventory. These lands are counted twice in the totals shown on each of the tables in this section.

**Table 8-11. Vacant Wetland and Riparian Resource Areas Affecting Lands
With Commercial and Industrial Zoning**

Site Type	CC	MRC	NC	GO	HI	LMI	CI	SHI	BK	QM	*Total Acres
Resource Areas											
Wetland Acres	.07	0	0	0	12.62	27.65	.35	0	.13	0	40.82
Riparian Acres	2.78	0	0	0	68.31	16.48	3.22	0	.21	0	91.00
Total Acres	2.85	0	0	0	80.93	44.13	3.57	0	0.34	0	131.82
150-Foot Impact Areas											
Wetland Impact Areas	3.69	0	0	0	52.76	20.72	4.25	0	.99	0	82.41

Riparian Impact Areas	5.14	1.91	0	0	26.83	32.87	8.53	0	1.41	0	76.69
*Total Acres	8.83	1.91	0	0	79.59	53.59	12.78	0	2.4	0	159.1
Grand Total	11.68	1.91	0	0	160.52	97.72	16.35	0	2.74	0	290.92
*Vacant lands were identified through the use of property class codes which are used by the Lane County Assessor's Office for taxation purposes.											

Environmental Consequences

Springfield's resource sites should be considered as part of a much larger ecological system of urban wetlands and stream corridors in the Springfield area. The intrinsic value of any particular riparian or wetland is affected by the degree of human intrusion and its connection with stream corridors and other natural resources. Wetlands and riparian areas contribute directly to decreased flooding potential and to improved water quantity and quality, fish and wildlife habitat, and groundwater recharge.

Table 8-11 shows that fully allowing conflicting uses to impact resource lands and impact areas would mean the loss of about 290.92 acres of vacant land for development. If the resource sites themselves were preserved, but the impact areas were allowed to be developed, the loss would be about 131.82 acres. The site specific impacts are described in Section 9.0 below.

Wetlands decrease flooding potential by providing flood water storage, dissipating the force of moving water, and by allowing storm water to seep gradually into the ground rather than moving rapidly over the surface and increasing flood damage and erosion. Wetlands improve water quantity and quality in a number of ways. Vegetated soils allow water to filter downward to the groundwater reservoir, adding volume to surface waters during low flow periods. Wetlands allow sediment to settle out and be trapped by vegetation before it reaches streams. Natural vegetation also absorbs chemicals and heavy metals, reducing water pollution. Thus, loss of wetlands contributes to flooding and reduces the quantity and quality of ground and surface water.

Varying levels of plant and animal diversity characterize wetlands. Wetlands provide fish and wildlife habitat by contributing to an integrated stream corridor ecosystem, which provides food, water, shelter, breeding and rearing areas for aquatic and terrestrial animals and birds. Reductions in the quality, quantity and availability of food, water, cover and living space have significant detrimental effects on wildlife. Wetlands that are connected to other natural resources allow travel corridors for wildlife.

When industrial or commercial development replaces native vegetation, the habitat value of the resource site decreases dramatically. Industrial/commercial development in wetland and riparian areas does not necessarily eliminate all fish and wildlife habitat, but changes the habitat in a way that decreases biodiversity, because only more aggressive and adaptable species can survive under changed ecological circumstances.

Commercial/industrial development in resource replaces native vegetation with impervious surface area, and contributes to flooding, reduced groundwater recharge, and increased sediment and nutrient loading (from lawns, wastes, etc.). The result is decreased water quantity and quality, and diminished fish and wildlife habitat. Industrial/commercial development usually

poses less of a threat to the ecological integrity of significant resource sites from children, pets and recreational activities. However, commercial/industrial development does pose specific threats to wetlands and riparian areas, including garbage and littering, disposal of industrial wastes, runoff from large parking lots, use of fertilizers and pesticides, fences and other structures which limit wildlife access, noise, and glare.

The Oregon Freshwater Wetland Assessment Methodology (OFWAM) describes and analyzes nine criteria for wetland evaluation and characterization. Springfield's OFWAM analysis was applied to each wetland site on the Local Wetland Inventory. Several riparian resource sites are also inventoried wetlands and were thus included in the OFWAM analysis.

The Wildlife Habitat Assessment (WHA) was used to assess the habitat value of Springfield's riparian resource areas and many of the wetlands that are part of this study. The WHA tool evaluates the relative availability of water, food, cover, and the level of interspersions and disturbance for riparian sites. In doing so, the WHA describes the habitat functions served by the resource site. The WHA provided a comparative score for identifying Springfield's highest value riparian areas.

The environmental consequence of fully allowing commercial/industrial development over Springfield's wetland and riparian resource sites is that the functions and values identified by the OFWAM and WHA studies would be lost.

Economic Consequences

The economic consequences of not protecting significant resource sites would be different, depending on the level of analysis. For the property owner, the economic impacts of allowing full commercial or industrial development of the site would be positive.

Assessor's records show that commercial and industrial land values vary widely. Tables 8-12 and 8-13 below provides a very rough estimate of the land value that would be lost if resource sites and impact areas were fully protected. The estimated value per acre for each zoning district was computed using the sum of the assessed values of all vacant land within commercial and industrial zoning districts divided by the vacant acreage in zone. The result was a crude assessed value per vacant acre. Fully allowing development of the resource sites and impact areas would avoid the loss of about \$16,859,468 in property value.

Tables 8-14 and 8-15 show the potential impact of resource protection on Springfield's capacity to locate businesses and factories. These impacts are expressed in terms lost job capacity. If conflicting commercial and industrial uses were fully allowed to impact resource areas and their associated impact areas, Springfield would preserve the capacity to site about 2995 jobs. If the resource sites were protected, but their associated impact areas were allowed to develop, capacity for 1679 jobs would be preserved and about 1316 would be lost.

**Table 8-12. Assessed Property Value Impacts
Vacant Commercial and Industrial Resource Areas**

Zoning District	Vacant Resource Acreage	Assessed Value per Vacant Acre	Estimated Value
Wetland Resource Area			
Light-Medium Industrial	27.65	\$65,369	\$1,807,453
Heavy Industrial	12.60	\$32,467	\$409,084
Special Heavy Industrial	0	\$32,467	\$0
Campus Industrial	.35	\$165,772	\$58,020
Quarry Mining	0	\$5,035	\$0
Booth Kelly MU	.13	\$45,311	\$5,890
Community Commercial	.07	\$265,376	\$18,576
Neighborhood Commercial	0	\$265,376	\$0
General Office	0	\$265,376	\$0
Major Retail Commercial	0	\$539,360	\$0
Total	40.8		\$2,299,023
Riparian Resource Area			
Light-Medium Industrial	16.48	\$65,369	\$1,077,281
Heavy Industrial	68.31	\$32,467	\$2,217,821
Special Heavy Industrial	0	\$32,467	\$0
Campus Industrial	3.22	\$165,772	\$533,786
Quarry Mining	0	\$5,035	\$0
Booth Kelly MU	.21	\$45,311	\$9,515
Community Commercial	2.78	\$265,376	\$737,745
Neighborhood Commercial	0	\$265,376	\$0
General Office	0	\$265,376	\$0
Major Retail Commercial	0	\$539,360	\$0
Total	91		\$4,576,148
Grand Total	131.80		\$6,875,171

**Table 8-13. Assessed Property Value Impacts
Vacant Commercial and Industrial Resource Impact Areas**

Zoning District	Vacant Impact Acreage	Assessed Value per Vacant Acre	Estimated Value
Wetland Impact Area			
Light-Medium Industrial	20.72	\$65,369	\$1,354,445
Heavy Industrial	52.76	\$32,467	\$1,712,959
Campus Industrial	4.25	\$32,467	\$137,985
Special Heavy Industrial	0	\$165,772	\$0
Quarry Mining	0	\$5,035	\$0
Booth Kelly MU	.99	\$45,311	\$44,858
Community Commercial	3.69	\$265,376	\$979,237
Neighborhood Commercial	0	\$265,376	\$0
General Office	0	\$265,376	\$0
Major Retail Commercial	0	\$539,360	\$0
Total	82.41		\$4,229,484

Zoning District	Vacant Impact Acreage	Assessed Value per Vacant Acre	Estimated Value
Riparian Impact Areas			
Light-Medium Industrial	32.87	\$65,369	\$2,148,679
Heavy Industrial	26.83	\$32,467	\$871,090
Campus Industrial	8.53	\$32,467	\$276,944
Special Heavy Industrial	0	\$165,772	\$0
Quarry Mining	0	\$5,035	\$0
Booth Kelly MU	1.41	\$45,311	\$63,889
Community Commercial	5.14	\$265,376	\$1,364,033
Neighborhood Commercial	0	\$265,376	\$0
General Office	0	\$265,376	\$0
Major Retail Commercial	1.91	\$539,360	\$1,030,178
Total	76.69		\$5,754,813
Grand Total	139.06		\$9,984,297

**Table 8-14. Job Capacity Losses
Vacant Commercial and Industrial Resource Areas**

Zoning District	Vacant Acreage	*Assumed Jobs per Acre	Potential Lost Job Capacity
Wetlands			
Light-Medium Industrial	27.65	13.4	371
Heavy Industrial	12.60	6.5	82
Special Heavy Industrial	0	6.5	0
Campus Industrial	.35	25	9
Quarry Mining	0	6.5	0
Booth Kelly MU	.13	13.4	2
Community Commercial	.07	36.1	3
Neighborhood Commercial	0	36.1	0
General Office	0	25	0
Major Retail Commercial	0	31.1	0
Total	40.8		467
Riparian Area			
Light-Medium Industrial	16.48	13.4	221
Heavy Industrial	68.31	6.5	444
Special Heavy Industrial	0	6.5	0
Campus Industrial	3.22	25	81
Quarry Mining	0	6.5	0
Booth Kelly MU	.21	13.4	3
Community Commercial	2.78	36.1	100
Neighborhood Commercial	0	36.1	0
General Office	0	25	0
Major Retail Commercial	0	31.1	0
Total	91		849
Grand Total	131.80		1316

The employees per acre ratios were derived from the Springfield Commercial Lands Study (pg. B-4) that was adopted in 2000.

**Table 8-15. Job Capacity Losses
Vacant Commercial and Industrial within 150-ft. Resource Impact Areas**

Zoning District	Vacant Impact Acreage	*Assumed Jobs per Acre	Potential Lost Job Capacity
Wetlands			
Light-Medium Industrial	20.72	13.4	278
Heavy Industrial	52.76	6.5	343
Campus Industrial	4.25	25	106
Special Heavy Industrial	0	6.5	0
Quarry Mining	0	6.5	0
Booth Kelly MU	.99	13.4	13
Community Commercial	3.69	36.1	133
Neighborhood Commercial	0	36.1	0
General Office	0	25	0
Major Retail Commercial	0	31.1	0
Total	82.41		873
Riparian Areas			
Light-Medium Industrial	32.87	13.4	214
Heavy Industrial	26.83	6.5	174
Campus Industrial	8.53	25	213
Quarry Mining	0	6.5	0
Booth Kelly MU	1.41	13.4	19
Community Commercial	5.14	36.1	186
Neighborhood Commercial	0	36.1	0
General Office	0	36.1	0
Major Retail Commercial	1.91	31.1	0
Total	76.69		806
Grand Total	139.06		1679
The employees per acre ratios were derived from the Springfield Commercial Lands Study (pg. B-4) that was adopted in 2000.			

It is unclear what affect the presence of a resource has on assessed values. What is clear is that full protection of resource sites located on commercial and industrial land could result in considerable lost value to property owners. However, these costs need to be balanced against the cost of off-site mitigation or payment of in-lieu fees, which is estimated at \$60,000 to \$100,000 an acre. Thus, the off-site mitigation costs (in the event that off-site mitigation was approved by DSL and the Army Corps) would be considerable. Economic consequences vary considerably based on individual site conditions, as noted in the discussion of the economic consequences of conserving resource areas, below.

From the industrial or commercial developer's point of view, the lack of local regulations could mean decreased uncertainty and design costs. The costs of additional consultant time could be avoided, the thought and energy required to design the project may be reduced, and there would be less local government discretion and perhaps greater certainty in the review process. On the other hand, there are a number of less obvious economic consequences that need to be considered. First, wetland and riparian areas can add amenity value to developments – especially

business and campus industrial parks. It is less likely that conservation of these resource areas would benefit standard commercial or industrial developments, except as a means of storm water quantity and quality control.

Second, local governments and property owners face potential increases in storm water management, flood control and federally mandated water quality improvement costs as wetlands are developed. Wetlands and riparian areas should be viewed as part of the storm water management system; often, when these resource sites are destroyed, their functions must be re-created as sumps, or artificial detention and water quality ponds, at considerable private and public expense. The City of Springfield as well as industrial/commercial property owners are facing major costs in meeting federal NPDES permitting requirements – costs that could increase if wetland and riparian water quality functions are lost. Flood insurance rates may also increase in the future, based on flood studies that may have to be revised because they under-estimated urban run-off rates.

Third, there could be a negative economic value by not providing a clear and objective *local* process for resolving development/resource conflicts. If the local review process is not clearly spelled out in the Springfield Development Code, the uncertainty and delay costs could increase for everyone involved.

Social Consequences

The social consequences of fully allowing unrestricted commercial/industrial development of significant wetland and riparian resource sites are mixed. On the positive side, needed employment opportunities and convenient shopping and service opportunities in the Springfield UGB would be maintained. By maintaining the full amount of vacant and underutilized commercial/ industrial land inside the Urban Growth Boundary, expansion of the UGB onto farm and grazing land could be delayed.

The social value of providing employment within the Springfield UGB is significant. If employment, commerce and services are concentrated inside the existing UGB, commuter travel could be minimized, which has positive social impacts. Pollution could be reduced, there could be more disposable income for other consumer wants, productivity could increase and there could be more leisure time to spend on non-work/non-shopping activities. In addition, development costs could be reduced, assuming that the wetland or riparian site would not be otherwise protected under state and federal regulations.

There also would be negative social consequences. If development was to occur on resource sites covering commercial/industrial land, urban setting and water based recreational functions and values, among others, would be lost. Open space views for travelers along the Hwy 126 and I-5 Corridor could be adversely affected. Workers would not have the advantage of open space views or places to spend free time.

Wetlands and riparian corridors usually add some amenity value to commercial/industrial developed land, and only marginally reduce the amount of buildable land. Social consequences (lost open space and views) would be adverse as a result of developing a resource area, which could otherwise be used as open space for the residential development. Wetlands and riparian

areas provide educational opportunities for those working near them, which would be lost. They also provide opportunities for urban quiet and solitude, the lack of which has adverse social consequences.

Energy Consequences

Energy consequences of unrestricted commercial/industrial development of wetland and riparian areas are also mixed. Assuming standard development practices, the results of building over the wetland could be more efficient use of commercial/industrial land, which could prevent premature expansion of the UGB, higher urban densities, more efficient use of infrastructure, shorter travel distances and less out-of-direction travel. From a solar perspective, it is possible that vegetation from forested wetlands and riparian corridors could shade south-facing windows, thus reducing solar access. In summary, the adverse energy consequences could be significant.

On the negative side, wetland vegetation has a moderating effect on climate. Trees provide shade that cool buildings in the summer and serve as a windbreak in the winter. At a macro level, plants absorb sunlight and transpire during the growing season, slightly reducing ambient air temperatures. Resource areas also provide local recreational opportunities, thus reducing the need to drive for outdoor experiences. Thus, loss of wetland and riparian vegetation would have some adverse energy consequences.

Consequences of Prohibiting Conflicting Commercial/Industrial Development

This portion of the ESEE analysis looks at the impacts of conserving a significant wetland and riparian resource sites on the conflicting use – in this case, commercial/industrial development.

Environmental Consequences

The environmental values that would be retained by conservation of wetlands are described above. Site-specific ESEE found in Section 9.0 of this report describes and analyzes the environmental qualities of each wetland in this category, which would be largely retained by prohibiting development on and near wetlands and riparian corridors, and restricting commercial/industrial development within the 150-foot impact area. Even with "full protection" of significant resource sites, activities associated with commercial/industrial development (increased human activity, run-off, toxic spills, noise, glare, trespass, etc.), which cannot be fully controlled by land use regulations, would probably degrade wetland values over time. The environmental consequences of conserving wetland and riparian resources are that these qualities, which make each resource significant, would be maintained.

Economic Consequences

It is useful to look at the economic consequences of conserving the significant wetland and riparian resource sites from different points of view. Impacts are often different at the study area level than from the point of view of the individual property owner. The ESEE analyses for each individual significant resource site address the special characteristics of that site in relation to property owner interests.

Study Area Level

Statewide Planning Goal 9 (Economy) requires that cities conduct an “economic opportunities analysis” that describes the types of industries and businesses that are likely to locate in the community and identifies the siting needs of such “targeted industries”. Goal 9 also requires local governments to provide “at least an adequate supply” of suitable industrial and commercial sites that meet local industrial and commercial siting criteria. At the study area level, there are measurable economic consequences associated with prohibiting industrial and commercial development within all resource sites and their impact areas. Table 8-16 shows the potential loss of vacant commercial and industrial land that could result from full resource protection.

**Table 8-16. Vacant Wetland and Riparian Resource Areas Affecting Lands
With Commercial and Industrial Zoning**

Site Type	CC	MRC	NC	GO	HI	LMI	CI	SHI	BK	QM	*Total Acres
Resource Areas											
Wetland Acres	.07	0	0	0	12.62	27.65	.35	0	.13	0	40.82
Riparian Acres	2.78	0	0	0	68.31	16.48	3.22	0	.21	0	91.00
Total Acres	2.85	0	0	0	80.93	44.13	3.57	0	0.34	0	131.82
150-Foot Impact Areas											
Wetland Impact Areas	3.69	0	0	0	52.76	20.72	4.25	0	.99	0	82.41
Riparian Impact Areas	5.14	1.91	0	0	26.83	32.87	8.53	0	1.41	0	76.69
*Total Acres	8.83	1.91	0	0	79.59	53.59	12.78	0	2.4	0	159.1
Grand Total	11.68	1.91	0	0	160.52	97.72	16.35	0	2.74	0	290.92
*Vacant lands were identified through the use of property class codes which are used by the Lane County Assessor’s Office for taxation purposes.											

At this writing, there are approximately 955 acres of vacant commercial and industrial land within Springfield’s UGB. This is a rough estimate of the acreage available for future commercial and industrial development based on a search of the Assessors records for parcels with property class codes indicating vacant land.

An estimated 132 acres of vacant wetland and riparian acres are affected by conflicting commercial and industrial uses. This represents about 14% of the vacant commercial and industrial land in Springfield. An additional 159 acres of impact area are affected by conflicting uses. In total, fully protecting wetland and riparian areas and their associated impact areas would mean a loss of 291 acres from the land which could conceivably be developed for commercial or industrial purposes.

Tables 8-17 and 8-18 below multiplies the resource and impact areas acreage by the by the average assessed value-per-acre for vacant land as shown in the Assessors records. This provides a very rough estimate of the land value that might be lost if wetlands and riparian areas

and their associated impact areas were fully protected. The value-per-acre was derived by using the Assessor's property class codes to identify vacant commercial and industrial property within the Springfield UGB. The assessed land values were then totaled by zoning district and divided by the acreage for each zone. As can be seen, the value-per-acre figures vary widely. The table shows a potential loss \$16,859,468 if both resource and impact areas were fully protected. The potential loss would be reduced to \$9,984,297 if only the resource areas were fully protected.

**Table 8-17. Assessed Property Value Impacts
Vacant Commercial and Industrial Resource Areas**

Zoning District	Vacant Resource Acreage	Assessed Value per Vacant Acre	Estimated Value
Wetland Resource Area			
Light-Medium Industrial	27.65	\$65,369	\$1,807,453
Heavy Industrial	12.60	\$32,467	\$409,084
Special Heavy Industrial	0	\$32,467	\$0
Campus Industrial	.35	\$165,772	\$58,020
Quarry Mining	0	\$5,035	\$0
Booth Kelly MU	.13	\$45,311	\$5,890
Community Commercial	.07	\$265,376	\$18,576
Neighborhood Commercial	0	\$265,376	\$0
General Office	0	\$265,376	\$0
Major Retail Commercial	0	\$539,360	\$0
Total	40.8		\$2,299,023
Riparian Resource Area			
Light-Medium Industrial	16.48	\$65,369	\$1,077,281
Heavy Industrial	68.31	\$32,467	\$2,217,821
Special Heavy Industrial	0	\$32,467	\$0
Campus Industrial	3.22	\$165,772	\$533,786
Quarry Mining	0	\$5,035	\$0
Booth Kelly MU	.21	\$45,311	\$9,515
Community Commercial	2.78	\$265,376	\$737,745
Neighborhood Commercial	0	\$265,376	\$0
General Office	0	\$265,376	\$0
Major Retail Commercial	0	\$539,360	\$0
Total	91		\$4,576,148
Grand Total	131.80		\$6,875,171

**Table 8-18. Assessed Property Value Impacts
Vacant Commercial and Industrial Resource Impact Areas**

Zoning District	Vacant Impact Acreage	Assessed Value per Vacant Acre	Estimated Value
Wetland Impact Area			
Light-Medium Industrial	20.72	\$65,369	\$1,354,445
Heavy Industrial	52.76	\$32,467	\$1,712,959
Campus Industrial	4.25	\$32,467	\$137,985
Special Heavy Industrial	0	\$165,772	\$0

Zoning District	Vacant Impact Acreage	Assessed Value per Vacant Acre	Estimated Value
Quarry Mining	0	\$5,035	\$0
Booth Kelly MU	.99	\$45,311	\$44,858
Community Commercial	3.69	\$265,376	\$979,237
Neighborhood Commercial	0	\$265,376	\$0
General Office	0	\$265,376	\$0
Major Retail Commercial	0	\$539,360	\$0
Total	82.41		\$4,229,484
Riparian Impact Areas			
Light-Medium Industrial	32.87	\$65,369	\$2,148,679
Heavy Industrial	26.83	\$32,467	\$871,090
Campus Industrial	8.53	\$32,467	\$276,944
Special Heavy Industrial	0	\$165,772	\$0
Quarry Mining	0	\$5,035	\$0
Booth Kelly MU	1.41	\$45,311	\$63,889
Community Commercial	5.14	\$265,376	\$1,364,033
Neighborhood Commercial	0	\$265,376	\$0
General Office	0	\$265,376	\$0
Major Retail Commercial	1.91	\$539,360	\$1,030,178
Total	76.69		\$5,754,813
Grand Total	139.06		\$9,984,297

Table 8-19 below, shows the assumed ratio of employees-per-acre in commercial and industrial zoning districts and the potential job capacity that would be lost if the resource and associated impact areas were fully protected. The employees per acre ratios were derived from the Springfield Commercial Lands Study (pg. B-4) that was adopted in 2000. The table indicates that would be the lost capacity of approximately 2995 commercial and industrial jobs if all resource sites and their respective impact areas were fully protected. If only the resource areas were fully protected and development occurred in the impact area, the lost job capacity would fall to 1316.

**Table 8-19. Job Capacity Losses
Vacant Commercial and Industrial Resource Areas**

Zoning District	Vacant Acreage	Assumed Jobs per Acre	Potential Lost Job Capacity
Wetlands			
Light-Medium Industrial	27.65	13.4	371
Heavy Industrial	12.60	6.5	82
Special Heavy Industrial	0	6.5	0
Campus Industrial	.35	25	9
Quarry Mining	0	6.5	0
Booth Kelly MU	.13	13.4	2
Community Commercial	.07	36.1	3
Neighborhood Commercial	0	36.1	0
General Office	0	25	0
Major Retail Commercial	0	31.1	0
Total	40.8		467

Zoning District	Vacant Acreage	Assumed Jobs per Acre	Potential Lost Job Capacity
Riparian Area			
Light-Medium Industrial	16.48	13.4	221
Heavy Industrial	68.31	6.5	444
Special Heavy Industrial	0	6.5	0
Campus Industrial	3.22	25	81
Quarry Mining	0	6.5	0
Booth Kelly MU	.21	13.4	3
Community Commercial	2.78	36.1	100
Neighborhood Commercial	0	36.1	0
General Office	0	25	0
Major Retail Commercial	0	31.1	0
Total	91		849
Grand Total	131.80		1316
The employees per acre ratios were derived from the Springfield Commercial Lands Study (pg. B-4) that was adopted in 2000.			

**Table 8-20. Job Capacity Losses
Vacant Commercial and Industrial Resource Impact Areas**

Zoning District	Vacant Impact Acreage	Assumed Jobs per Acre	Potential Lost Job Capacity
Wetlands			
Light-Medium Industrial	20.72	13.4	278
Heavy Industrial	52.76	6.5	343
Campus Industrial	4.25	25	106
Special Heavy Industrial	0	6.5	0
Quarry Mining	0	6.5	0
Booth Kelly MU	.99	13.4	13
Community Commercial	3.69	36.1	133
Neighborhood Commercial	0	36.1	0
General Office	0	25	0
Major Retail Commercial	0	31.1	0
Total	82.41		873
Riparian Areas			
Light-Medium Industrial	32.87	13.4	214
Heavy Industrial	26.83	6.5	174
Campus Industrial	8.53	25	213
Quarry Mining	0	6.5	0
Booth Kelly MU	1.41	13.4	19
Community Commercial	5.14	36.1	186
Neighborhood Commercial	0	36.1	0
General Office	0	36.1	0
Major Retail Commercial	1.91	31.1	0
Total	76.69		806
Grand Total	139.06		1679
*The employees per acre ratios were derived from the Springfield Commercial Lands Study (pg. B-4) that			

Zoning District	Vacant Impact Acreage	Assumed Jobs per Acre	Potential Lost Job Capacity
was adopted in 2000.			

Springfield has invested considerable public dollars in providing infrastructure (transportation, sewer, water, storm drainage, utilities) to commercial and industrial land within the UGB. The return on public investment would be reduced in proportion to the amount of industrial land that cannot be developed due to wetland or other constraints.

Location of Resource Area on the Property

Wetlands and riparian areas often serve as effective boundaries separating property ownerships. In several cases, we are associated with riparian corridors. In such cases, wetland conservation has little or no additional adverse economic impact. In situations where the wetland covers most of a small property, or blocks all access to a property, the economic consequences could be extremely adverse, and make it impossible to completely avoid the wetland. Such situations are noted in the ESEE analyses associated with individual properties.

Developer Impact

From the developer's point of view, local regulations could mean increased design costs. It is often easier and less time-consuming to develop over a resource area, particularly wetlands, rather than around them, especially where large, rectangular buildings are required. The costs of additional consultant time could increase, as could the level of thought and energy required to design the project. There would be greater local government discretion and perhaps greater uncertainty in the review process. This uncertainty can be minimized through clear local standards for development in or near resource areas.

Flexibility needs to be built into these local standards to allow officials and developers to resolve obstacles to construction while preserving the functions and values of the resource. Certainty can be provided through rigid standards. Flexibility sometimes requires some uncertainty. A review process that provides developers a choice between meeting clear and objective standards (check list approach to design review) and a discretionary process that focuses on performance standards may provide the balance needed to allow development near resources to proceed.

As noted above, all locally *significant* wetlands many riparian corridors are regulated by state and federal standards anyway, so that the supply of industrial and commercial land will be reduced somewhat in any event. By mapping resource areas, buyers and sellers of industrial and commercial properties will have a much better idea of how much of their land is actually buildable, and how much would be subject to local, state or federal regulations.

Positive Economic Consequences

On the other hand, there are positive economic consequences associated with wetland and riparian conservation. First, many studies have demonstrated that resource areas can add value to developments - both for neighboring properties and for commercial/industrial developments. Conserving resource areas through thoughtful design can increase neighboring property values

and may, depending on the nature of the proposed commercial/industrial use, increase lease or sales price of space or lots.

Second, potential costs for storm water management, flood control and federally mandated water quality improvement program could decrease if wetlands were not developed. Wetlands and riparian corridors should be viewed as part of the storm water management system. Often, when wetlands and riparian areas are destroyed, their functions must be re-created as sumps, or artificial detention and water quality ponds, at considerable public expense. Springfield is facing major costs in meeting federal NPDES permitting requirements; costs that could increase if resource water quality functions are lost. Flood insurance rates may also increase in the future, based on flood studies that may have to be revised because they underestimated urban runoff rates.

Third, there could be a positive economic value by providing a clear and objective *local* process for resolving development/resource conflicts. If the local review process is clearly spelled out in the Springfield Development Code, uncertainty and delay costs could decrease for everyone involved.

Social Consequences

The social consequences of conserving significant wetland resource sites are mixed. In order to conserve significant resource sites that are zoned for industrial and commercial uses, the opportunity for jobs close to urban housing may be diminished. If all significant wetland and riparian resource sites were conserved, then 291 acres and 2995 jobs could be displaced to land outside the existing UGB. The importance of close-in employment opportunities needs to be balanced against the clear benefits of resource conservation.

On the positive side, resource areas may add amenity value to developed land. The social consequences (open space and views) would be positive as a result of conserving the significant resource areas, which can be used as open space for employees and the general shopping public. Wetlands and riparian areas provide educational opportunities for those working near them, which would be maintained. Resource areas also provide opportunities for urban quiet and solitude, which has positive social consequences.

Energy Consequences

Energy consequences of resource conservation are also mixed, but in this case would be largely negative. Resource lands cannot be preserved on commercial/industrial land without impacts on the acreage needed to accommodate jobs in Springfield. Urban jobs could be displaced to more distant areas (Coburg is an example of this trend), increasing travel time, congestion, and stress. Especially along the major corridors, where transportation access is a key locational factor, the energy consequences of resource conservation would be significant and adverse.

It is less likely that vegetation from forested wetlands riparian areas would shade large industrial or commercial users, or significantly impair solar access. Riparian vegetation can have a moderating effect on nearby areas. Trees provide shade that cools buildings in the summer serve

as a windbreak in the winter. At a macro level, plants absorb sunlight and transpire during the growing season, slightly reducing ambient air temperatures. Resource sites can also provide local recreational opportunities, thus reducing the need to drive for outdoor experiences. Thus, conservation of wetland and riparian vegetation would have additional positive energy consequences.

Consequences of Limiting Conflicting Commercial/Industrial Development

This portion of the ESEE analysis looks at the impacts of limiting conflicting commercial and industrial on wetland and riparian sites. As mentioned above, the consequences of limiting conflicting uses depends on the measures used to “limit” impacts. The proposed program of protection for riparian and wetland corridors would establish 25-foot setbacks from resource sites (50-75 foot setbacks from large rivers and fish-bearing streams such as the Willamette River). Low impact development strategies will be employed when building within 150-feet of each resource site. Public facilities and street improvements would be allowed to impact resource sites and their impact areas after considering alternatives and impact reduction standards. Replacement and expansion of existing structures would also be allowed, subject to mitigation standards. Hardship variances shall be granted to property owners who land would be rendered not buildable by the application of the setbacks and standards described above

Environmental Consequences

Limiting conflicting residential development will largely retain the wetland and riparian functions that are described in Section 6.1. These values would be retained, in part, by setbacks that would limit development on or near resource sites. Thus the environmental impacts of prohibiting conflicting uses include preservation of wildlife habitat, fish habitat, water quality function, and/or hydrologic control function; and or preservation of rare plant communities, federal or state listed species, or locally unique native plant communities. Employing low impact development standards within the impact area will help preserve site vegetation and the hydrology of affected riparian and wetland sites.

Economic Consequences

The section below discusses the economic consequences of limiting the impact of conflicting uses on significant wetland and riparian resource sites at both the study area and property owner levels. Often, impacts are less significant at the study area level than for the individual property owner. The ESEE analysis addresses the characteristics of the resource site in relation to property owner interests.

Study Area Level

Table 8-21 shows that Springfield’s inventoried wetlands and riparian resource sites cover about 334.92 acres of land (developed and undeveloped) that is zoned for commercial and industrial use. When the 150-foot impact area is added, the total area is about 873 acres. Keep in mind that the 150-foot impact area is not a buffer. The impact area is based on best available science, and defines the distance from a resource site within which development is likely to have an

ecological impact. State planning rules require cities to define such impact areas and describe the Economic, Social, Environmental and Energy (ESEE) consequences of allowing conflicting uses to impact natural resource sites.

**Table 8-21. Wetland and Riparian Resource Areas Affecting Lands
With Commercial and Industrial Zoning**

Site Type	CC	MRC	NC	GO	HI	LMI	CI	SHI	BK	QM	*Total Acres
Resource Areas											
Wetland Acres	12.25	0	.42	0	30.51	71.61	.35	11.53	24.08	2.46	153.21
Riparian Acres	2.78	5.6	0	.16	87.03	41.09	13.84	1.48	29.73	0	181.71
Total Acres	15.03	5.6	0.42	0.16	117.54	112.7	14.19	13.01	53.81	2.46	334.92
150-Foot Impact Areas											
Wetland Impact Areas	27.58	0	.47	0	113.31	72.12	5.01	33.18	15.83	9.7	277.2
Riparian Impact Areas	7.49	22.58	0	1.37	88.58	97.23	25.7	3.96	10.54	3.72	261.17
*Total Acres	35.07	22.58	0.47	1.37	201.89	169.35	30.71	37.14	26.37	13.42	538.37
Grand Total	50.10	28.18	.89	1.53	319.43	282.05	44.36	50.15	80.18	15.88	873.29

**Table 8-22. Vacant Wetland and Riparian Resource Areas Affecting Lands
With Commercial and Industrial Zoning**

Site Type	CC	MRC	NC	GO	HI	LMI	CI	SHI	BK	QM	*Total Acres
Resource Areas											
Wetland Acres	.07	0	0	0	12.62	27.65	.35	0	.13	0	40.82
Riparian Acres	2.78	0	0	0	68.31	16.48	3.22	0	.21	0	91.00
Total Acres	2.85	0	0	0	80.93	44.13	3.57	0	0.34	0	131.82
150-Foot Impact Areas											
Wetland Impact Areas	3.69	0	0	0	52.76	20.72	4.25	0	.99	0	82.41
Riparian Impact Areas	5.14	1.91	0	0	26.83	32.87	8.53	0	1.41	0	76.69
*Total Acres	8.83	1.91	0	0	79.59	53.59	12.78	0	2.4	0	159.1
Grand Total	11.68	1.91	0	0	160.52	97.72	16.35	0	2.74	0	290.92

*Vacant lands were identified through the use of property class codes which are used by the Lane County Assessor's Office for taxation purposes.

The economic consequences of *limited protection* on resource sites and their respective development setbacks on *vacant* commercial and industrial properties can be measured in terms of acres of land lost for development and the lost capacity to site the businesses and factories that create jobs. The proposed protection program would minimize development within resource sites

place a development setback on significant wetlands and riparian corridors. Table 8-22 shows this protection would mean the loss of about 131.82 acres of land for development that lay within the boundaries of wetlands and riparian areas.

Those riparian and wetland areas identified as Water Quality Limited Streams and or tributaries are already subject to 50-foot or 75-foot setbacks. The proposed protection program would apply the same 50 and 75-foot setbacks on wetlands and riparian corridors that are already applied by stormwater quality regulations adopted by the City of Springfield. The program would also require low impact development strategies to be employed for new development within 150 feet of resource sites.

Table 8-23 below shows the vacant commercial and industrial acreage impacted by the proposed setback protections with no consideration for how the development design might reduce those impacts. If the recommended setbacks are adopted, about 31 acres of property affected by wetlands and 25 acres of property affected by riparian areas would be lost to development. The total potential impact is about 56.10 acres.

Table 8-23. Vacant Commercial and Industrial Land within Proposed Setbacks

Zoning District	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres
Wetlands				
Light-Medium Industrial	4.81	.82	0	5.63
Heavy Industrial	2.01	19.15	0	21.16
Campus Industrial	0	2.56	0	2.56
Special Heavy Industrial	0	0	0	0
Quarry Mining	0	0	0	0
Booth Kelly MU	0	.47	0	.47
Community Commercial	1.47	.11	0	1.58
Neighborhood Commercial	0	0	0	0
General Office	0	0	0	0
Major Retail Commercial	0	0	0	0
Total	8.29	23.11	0	31.4
Riparian Areas				
Light-Medium Industrial	2.05	4.72	1.26	8.03
Heavy Industrial	1.22	8.93	0	10.15
Campus Industrial	0	2.83	.03	2.86
Special Heavy Industrial	0	0	0	0
Quarry Mining	0	0	0	0
Booth Kelly MU	0	.82	0	.82
Community	0	0	2.6	2.6

Zoning District	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres
Commercial				
Neighborhood Commercial	0	0	0	0
General Office	0	0	0	0
Major Retail Commercial	0	.24	0	.24
Total	3.27	17.54	3.89	24.7
Grand Total	11.56	40.65	3.89	56.10

The true acreage lost will depend upon the arrangement of lots and public infrastructure. For example, the acres lost to setbacks may be reduced by placing required stormwater facilities within those setbacks.

As mentioned above, 50 and 75-foot setbacks are already applied to many wetlands and riparian sites through stormwater quality protections that are already in place. The affect of the proposed program of protection recommended in this study adds a 25-foot setback to those streams and wetlands not covered by the stormwater protections. The 25-foot setbacks shown on Table 8-23 above would be applied to the remaining significant wetlands and riparian corridors. The 25-foot setback for development would remove about 8 acres from wetland properties and 3 acres from riparian properties.

The program would also require low impact development strategies to be employed for new development within 150 feet of remaining sites.

Table 8-24 below multiplies the acreage within the 25, 50 and 75 foot recommended setbacks by the average assessed value-per-acre for vacant land as shown in the Assessors records. This provides a very rough estimate of the land value that might be lost if the recommended setbacks are adopted. The value-per-acre was derived by using the Assessor's property class codes to identify vacant commercial and industrial property within the Springfield UGB. The assessed land values were then totaled by zoning district and divided by the acreage for each zone. As can be seen, the value-per-acre figures vary widely. Table 8-24 shows the value of the wetland and riparian resource lands that would be lost if they were fully protected to be \$3,938,532. The 50 and 75 foot setbacks are already required under Springfield's stormwater quality protection program. The 25-foot setback required by this study represents a lost value of about \$940,402.

Table 8-24. Potential Lost Property Value within Proposed Setbacks

Zoning District	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres	Assessed Value per Acre	Assessed Vacant Land Value Lost	Value Lost to 25 ft. Setback
Wetlands							
Light-Medium Industrial	4.81	.82	0	5.63	\$65,369	\$368,027	\$314,425

Zoning District	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres	Assessed Value per Acre	Assessed Vacant Land Value Lost	Value Lost to 25 ft. Setback
Heavy Industrial	2.01	19.15	0	21.16	\$32,467	\$687,002	\$62,258
Campus Industrial	0	2.56	0	2.56	\$165,772	\$424,376	0
Special Heavy Industrial	0	0	0	0	\$32,467	0	0
Quarry Mining	0	0	0	0	\$5,035	0	0
Booth Kelly MU	0	.47	0	.47	\$45,311	\$21,296	0
Community Commercial	1.47	.11	0	1.58	\$265,376	\$419,294	\$390,103
Neighborhood Commercial	0	0	0	0	\$265,376	0	0
General Office	0	0	0	0	\$265,376	0	0
Major Retail Commercial	0	0	0	0	\$539,360	0	0
Total	8.29	23.11	0	31.4		\$1,919,995	\$766,786
Riparian Areas							
Light-Medium Industrial	2.05	4.72	1.26	8.03	\$65,369	\$524,913	\$134,006
Heavy Industrial	1.22	8.93	0	10.15	\$32,467	\$329,540	\$39,610
Campus Industrial	0	2.83	.03	2.86	\$165,772	474,107	0
Special Heavy Industrial	0	0	0	0	\$32,467	0	0
Quarry Mining	0	0	0	0	\$5,035	0	0
Booth Kelly MU	0	.82	0	.82	\$45,311	0	0
Community Commercial	0	0	2.6	2.6	\$265,376	689,977	0
Neighborhood Commercial	0	0	0	0	\$265,376	0	0
General Office	0	0	0	0	\$265,376	0	0
Major Retail Commercial	0	.24	0	.24	\$539,360	0	0
Total	3.27	17.54	3.89	24.7		\$2,018,537	\$173,616
Grand Total	11.56	40.65	3.89	56.10		\$3,938,532	\$940,402

Table 8-25 shows the impact of recommended setbacks on the capacity to site new businesses and factories and the jobs they create. The proposed protection setbacks would reduce the

capacity to site 691 jobs. Setting aside the lost capacity tied to the 50 and 75 foot setbacks stemming from the stormwater requirements, the proposed 25 foot setbacks added by this protection program reduces job capacity by about 12 acres or 165 jobs, added to the 1316 jobs that would be lost to protection of the resource sites themselves.

Table 8-25. Potential Lost Job Capacity within Proposed Setbacks

Zoning District	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres	*Assumed Jobs per Acre	Potential Lost Job Capacity within Setbacks	Capacity Lost to 25 ft. Setback
Wetlands							
Light-Medium Industrial	4.81	.82	0	5.63	13.4	75	64
Heavy Industrial	2.01	19.15	0	21.16	6.5	138	13
Campus Industrial	0	2.56	0	2.56	25	64	0
Special Heavy Industrial	0	0	0	0	6.5	0	0
Quarry Mining	0	0	0	0	6.5	0	0
Booth Kelly MU	0	.47	0	.47	13.4	6	0
Community Commercial	1.47	.11	0	1.58	36.1	57	53
Neighborhood Commercial	0	0	0	0	36.1	0	0
General Office	0	0	0	0	25	0	0
Major Retail Commercial	0	0	0	0	31.1	0	0
Total	8.29	23.11	0	31.4		340	130
Riparian Areas							
Light-Medium Industrial	2.05	4.72	1.26	8.03	13.4	108	27
Heavy Industrial	1.22	8.93	0	10.15	6.5	66	8
Campus Industrial	0	2.83	.03	2.86	25	72	0
Special Heavy Industrial	0	0	0	0	6.5	0	0
Quarry Mining	0	0	0	0	6.5	0	0
Booth Kelly MU	0	.82	0	.82	13.4	11	0
Community Commercial	0	0	2.6	2.6	36.1	94	0
Neighborhood	0	0	0	0	36.1	0	0

Zoning District	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres	*Assumed Jobs per Acre	Potential Lost Job Capacity within Setbacks	Capacity Lost to 25 ft. Setback
Commercial							
General Office	0	0	0	0	25	0	0
Major Retail Commercial	0	.24	0	.24	31.1	0	0
Total	3.27	17.54	3.89	24.7		351	35
Grand Total	11.56	40.65	3.89	56.10		691	165
The employees per acre ratios were derived from the Springfield Commercial Lands Study (pg. B-4) that was adopted in 2000.							

Local protection programs are required by state law to grant a variance to property owners whose property would be rendered unbuildable by such setbacks or other protection policies. The proposed protection plan also offers the flexibility of locating required stormwater detention facilities within setback areas which will further reduce the true impact of protection measures on property owners.

From the property owner and developer's point of view, an adopted protection program will provide greater certainty regarding site development. Although buildable area would be reduced, developing outside the 25-75 foot setbacks generally negates the cost imposed by conducting formal delineations. If, on the other hand, a developer were to propose limited development within a wetland or riparian setback, a resource delineation (and DSL concurrence in this delineation) would be required.

Environmental Consequences

The environmental values that would be retained by conservation of resource sites are described above. The OFWAM analysis and report describes and analyzes the environmental qualities of each wetland in this category, which would be largely retained by prohibiting development on and near wetlands, or partially retained by restricting commercial/industrial development within the 25-foot buffer area. The ESEE analysis anticipates that public facilities and streets will be constructed through certain resource areas, and that impacts from public facility construction will be reduced through a combination of local, state and federal mitigation standards.

Economic Consequences

It is useful to look at the economic consequences of conserving the significant resource sites from different points of view. Impacts are often different at the study area level than from the point of view of the individual property owner. The ESEE analyses for each individual significant wetland resource site address the special characteristics of that site in relation to property owner interests.

Study Area Level

At the study area level, the economic consequences of *avoiding* wetland and riparian areas on commercial/ industrial properties are significant. As of 2005, Table 8-22 shows the Springfield UGB included an estimated 13.49 acres of vacant, and underutilized commercial lands are in conflict with resource sites. An estimated 2.85 acres are within resource boundaries and 10.74 acres are within their associated impact acres.

More significantly, Table 8-22 shows there are approximately 409.15 acres of vacant, and underutilized industrial zoned land that are in conflict with resource sites and their impact areas. About 128.97 acres are located within resource boundaries and 280.18 acres are within their associated impact areas.

Tables 8-19 and 8-20 show there would be a lost capacity of 322 commercial jobs if all resource sites and their impact areas were fully protected. The tables show there would be a lost capacity affecting 2109 industrial jobs if the sites and impact areas were fully protected.

Springfield has also invested considerable public dollars in providing infrastructure (transportation, sewer, water, storm drainage, utilities) to commercial and industrial land in the UGB. The return on public investment would be reduced in proportion to the amount of commercial and industrial land that could not be developed due to wetland or other constraints.

Location of Wetland on Property

Wetlands often serve as effective boundaries separating property ownerships. In several cases, wetlands are associated with riparian corridors. In such cases, wetland conservation has no additional adverse economic impact. In situations where the resource site covers most of a small property, or blocks all access to a property, the economic consequences could be adverse, and make it impossible to completely avoid the resource.

Developer Impact

From the developer's point of view, local regulations would mean increased regulatory certainty but reduced land area for development. It is often easier and less time-consuming to develop over a resource, rather than around it, especially where large, rectangular buildings are required. The costs of additional consultant time could increase, as could the level of thought and energy required to design the project.

Positive Economic Consequences

On the other hand, there are positive economic consequences associated with resource conservation. First, many studies have demonstrated that wetlands and riparian areas can add value to developments – both for neighboring properties and for the commercial/industrial developments. Conserving resource sites through thoughtful design would probably increase neighboring property values and may, depending on the nature of the proposed commercial/ industrial use, increase lease or sales price of space or lots.

Second, potential costs for storm water management, flood control and federally mandated water quality improvement program could decrease if resource sites are not developed. Wetlands and riparian areas should be viewed as part of the storm water management system; often, when resource sites are destroyed, their functions must be re-created as sumps, or artificial detention and water quality ponds, at considerable public expense. Springfield is facing major costs in meeting federal NPDES permitting requirements; costs that could increase if resource water quality functions are lost. Flood insurance rates may also increase in the future, based on flood studies that may have to be revised because they underestimated urban runoff rates.

Third, there may be a positive economic value by providing a clear and objective *local* process for resolving development/wetland conflicts. If the local review process is clearly spelled out in the Springfield Development Code, the uncertainty and delay costs could decrease for everyone involved.

8.5 ESEE Consequences of Allowing Conflicting Transportation and Public Facilities

This supplemental ESEE analysis is concerned with public facilities that are needed to support urban development, such as streets, trails, sewer, storm drainage, and water facilities. Major sanitary sewer, water, storm drainage or transportation facilities usually are recognized on the City's facilities master plans and Transportation System Plan (TSP). Public facilities also include private utilities (electrical, cable, telephone and gas), airport facilities, power facilities (substations and transmission) and communication towers, and storm drainage facilities. These public projects are, by definition, necessary to support planned urban development. Not included under the public facilities definition are schools, hospitals and similar institutional uses.

Conflicting Land Uses

- A. Sewage collection facilities and lines;
- B. Water treatment and storage facilities, and lines;
- C. Storm water detention facilities and collection lines;
- D. Transportation facilities, including multi-use paths and streets;
- E. Electrical substations and major transmission lines (including non-public lines);
- F. Communication towers (including private and public towers);
- G. Above and below ground utilities - including telephone, electrical, gas, and cable TV.

Conflicting Land Use Activities

- A. Maintenance and reconstruction of public facilities, including vegetation management (mowing, trimming, tree removal and spraying), excavation and installation of new facilities; and
- B. Construction impacts, including short-term impacts (noise, runoff, erosion, disruption of vegetation, etc.) resulting from construction of conflicting uses.

The ESEE Analysis should consider whether wetland resource sites and their impact areas can be avoided by the planned public facility, and if not, how the impacts of the planned public facility project can be reduced. Avoidance is often most difficult for this category, because (a) gravity

flow sewer lines often are most economical and energy efficient if constructed within a drainage corridor, and (b) planned road extensions are often most economical and direct when constructed in wetlands, because wetlands frequently have been passed over as development sites. Many public facilities, especially those constructed to support individual developments, are not recognized on public facility plans. Occasionally such facilities must cross a wetland to reach sewer, water, storm drainage, or transportation facilities. The level of protection afforded a wetland in this circumstance depends on the City's policy determination, based in part on this analysis, and in part on public testimony.

Consequences of Fully Allowing Conflicting Public and Transportation Facilities Conflicting Uses

Environmental Consequences

In most cases, allowing the conflicting public facility does not mean that the LSW would be destroyed. The environmental consequences of constructing and maintaining planned public facilities depend on the answer to two primary questions:

1. Can the wetland or riparian resource be avoided, either partially or completely? and,
2. If avoidance is impractical, can the project be constructed so as to mitigate adverse impacts?

These determinations can only be made on a site-specific basis.

The OFWAM analysis describes the functions and values of wetlands and many riparian areas that could be adversely affected by the location and construction of public facilities projects. That report includes specific measures of ecological integrity, wetland wildlife habitat, and flood control. If unrestricted public facilities construction were permitted through the wetland, it would mean that the qualities that make each wetland significant would be compromised. The Wildlife Habitat Assessment (WHA) report ranks the wildlife habitat functions and values for each riparian and many wetland sites.

Wetlands and riparian areas contribute directly to decreased flooding potential and to improved water quantity and quality, fish and wildlife habitat, and groundwater recharge. Resource areas decrease flooding potential by providing flood water storage, dissipating the force of moving water, and by allowing storm water to seep gradually into the ground rather than moving rapidly over the surface. Wetlands and riparian areas improve water quantity and quality in a number of ways. Vegetated soils allow water to filter downward to the groundwater reservoir, adding volume to surface waters during low flow. They allow sediment to settle out or be trapped by wetland vegetation before it reaches streams. Natural vegetation also absorbs hazardous chemicals and heavy metals, reducing water pollution. Thus, loss of resource sites caused by public infrastructure contributes to flooding and reduces the quantity and quality of ground and surface water.

Varying levels of plant and animal diversity characterize wetlands. Wetlands and riparian areas provide improve fish and wildlife habitat by contributing to an integrated stream corridor ecosystem, which provides food, water, shelter, breeding and rearing areas for aquatic and

terrestrial animals and birds. Reductions in the quality, quantity and availability of food, water, cover and living space all have significant detrimental effects on wildlife.

Of the many types of public facilities, street construction is often the most destructive of resource values. Often the choice for routing major streets is between removing existing development, and constructing the street through a resource site, because the site was previously passed over by development. Street construction could result in draining wetlands and riparian areas, removing native vegetation, or bisecting resource sites with consequent loss of connectivity. Run-off from impervious surface areas could also adversely affect water quality. Traffic along the street can kill wetland and riparian dependent wildlife. Moreover, streets provide public access to resource sites, which could result in a variety of adverse impacts, including vandalism, garbage dumping, and increased human and pet activity.

An effective way to minimize these impacts is to jog streets around resource sites, and limit public access (which also limits wildlife access) from the street through fencing. Opening a natural area to public view makes it a public asset that is more likely to be cared for.

Planned street locations are particularly problematical for resource sites in Springfield, because future major streets often have been planned through some undeveloped wetland and riparian areas. This illustrates the conflict between the public need for street connectivity and resource conservation.

Sanitary sewer construction can also have significant adverse impacts. Gravity flow sewers are often routed through wetlands precisely because wetlands are lowlands. In addition to short-term impacts for vegetation removal and excavation, improper construction of bedding for sewer lines can drain a wetland permanently. An effective means of minimizing sewer impacts is to design the sewer line to avoid the wetland. Where this is impossible, appropriate design and construction methods can often bring the wetland back to its original condition within a few years.

Storm sewer construction can have major adverse impacts on wetland and riparian functions and values especially on water quality. Where closed conduit systems deposit large quantities of untreated storm water directly to a wetland, wetland functions and values can be compromised in a short period of time. Although principal functions of resource areas include nutrient attenuation, flood control, and sediment reduction, the design and construction of storm water control systems should avoid over-taxing the capacity of individual resource sites to perform these functions.

Water system improvements probably have the least adverse impact on wetland and riparian functions and values. Their design and construction does not require a great deal of space, and they are typically constructed at high, rather than lower, elevations. Where water lines must cross through a resource area, their impacts can be readily reduced through proper design and re-vegetation.

Economic Consequences

State and federal wetland regulations require that avoidance be considered as the first option where wetlands and riparian resources stand in the way of planned public facilities. Avoidance can increase the costs of public facilities construction and maintenance, due to a) increased costs of constructing longer streets or lines, b) increased costs of acquiring upland (and possibly developed properties) adjacent to resource sites, c) increased costs for pumping stations which may be required if gravity flow systems cannot be constructed, d) increased commuting costs for out-of-direction travel, and e) increased maintenance costs for longer or less direct streets or lines.

Avoidance is often most difficult for this conflicting use category. As noted above, gravity low sanitary and storm sewer lines often are most economical and energy efficient if constructed within a drainage corridor, where wetlands and riparian corridors tend to be located. Planned road extensions are often most economical and direct when constructed through, rather than around wetlands, because wetlands frequently have been passed over as development sites.

The costs mentioned above need to be balanced against the cost of on- or off-site mitigation, which may range from approximately \$60,000 to \$100,000 an acre, depending on the type of wetland or resource area. Thus, the off-site mitigation costs (in the event that off-site mitigation were to be approved by DSL and the Army Corps) may be considerable.

Economic consequences vary considerably based on individual site conditions, as noted in the site-specific ESEE analyses where planned public facilities are identified as a conflicting use. As noted above, *avoidance and mitigation* must be considered in any case. However, from the project manager's point of view, fewer *local* regulations could mean decreased uncertainty and design costs. The costs of additional consultant time could be avoided, the thought and energy required to design the project could be reduced, and there would be less local planning discretion and perhaps greater certainty in the review process.

Social Consequences

The social consequences of allowing planned public facilities are mixed. Public facilities projects are essential to serve existing and planned population and employment growth in Springfield. On the positive side, public construction and maintenance costs would probably be lessened if wetland and riparian impacts were either avoided or reduced. By maintaining all of the buildable land currently inside the Urban Growth Boundary, the efficiency of service provision would be maintained. Out-of-direction travel to avoid resource sites, and associated pollution and traffic impacts could be slightly reduced, assuming that future streets are designed in a "grid" pattern.

Social consequences (lost open space and views) would be adverse as a result of constructing public facilities through those wetland sites that could otherwise be used as public open space. Wetlands and riparian areas provide educational opportunities for those living near them, which could be lost. Resource areas also provide opportunities for urban quiet and solitude, the lack of which has adverse social consequences

The OFWAM analysis identifies social qualities of each wetland and many riparian sites in this category that would be compromised by unrestricted public facilities construction. That report includes specific criteria for educational potential, visual/aesthetic quality, and recreational opportunities. The social consequences of allowing public facilities construction over the wetland are that the human-related qualities that help make each wetland significant would be lost.

Energy Consequences

The energy consequences of allowing planned public facilities are generally positive. Straight streets (which do not jog to avoid wetlands) are the most efficient way of moving traffic. Straight sewer lines built near stream beds (where wetlands are most often found) require fewer pump stations and conserve more energy. On the other hand, integration of wetlands into area-wide drainage programs would be much more energy efficient than filling wetlands and constructing closed conduit systems. Other energy consequences counter-balance each other, as described in other supplemental ESEE analyses.

Consequences of Prohibiting Conflicting Public and Transportation Facilities Conflicting Uses

This portion of the ESEE analysis looks at the impacts of fully protecting wetlands and riparian areas by prohibiting the construction and maintenance of planned public facilities.

Environmental Consequences

The environmental values that would be retained by full protection of wetlands are described above. The OFWAM analysis describes the environmental qualities of each wetland and many riparian areas in this category, which would be largely retained by prohibiting public facilities construction and maintenance on and near wetlands. Even with "full protection" of resource areas, there are activities associated with public facilities construction and maintenance (increased human activity, runoff noise, glare, trespass, vandalism, etc.), which cannot be fully controlled by land use regulations or design techniques, that would probably degrade wetland resource values over time. The OFWAM report describes and analyzes nine criteria for wetland evaluation and characterization. That report includes four specific biological measures that are compromised by development: wildlife habitat, fish habitat, water quality, and hydrological control. These four criteria are evaluated in the following manner: **wildlife habitat** evaluates the habitat diversity for species generally associated with wetlands and wetland edges; **fish habitat** evaluates how the wetland contributes to fish habitat in streams, ponds or lakes associated with the wetland; **water quality** evaluates the potential of a wetland to reduce the impacts that excess nutrients in storm water runoff have on downstream waters; **hydrological control** evaluates the effectiveness of a wetland in storing floodwaters and reducing downstream flood peaks.

The Wildlife Habitat Assessment (WHA) was used to evaluate riparian sites in terms of relative quantity, quality, diversity and seasonality of the components that appear at the site. Also considered were the degree and permanence of physical and human disturbance, proximity to

other water-related and upland areas, and unique features including wildlife, flora and rarity of habitat.

The environmental consequences of conserving wetland and riparian areas are that prohibiting conflicting uses and conserving wetland and riparian resources would maintain these qualities, which make each resource area significant.

Economic Consequences

The economic consequences of conserving significant wetland and riparian resource sites that lie in the path of planned public facilities are mixed, but largely negative. Resource areas are often selected as preferred transportation routes because of their undeveloped status. Design, construction and maintenance costs generally would increase, as streets, sanitary sewer collection systems, and water storage and distribution systems are redesigned to avoid or mitigate wetlands. Long-term public maintenance costs could also increase. In other words, there are public as well as private costs associated with maintaining water quality and urban wildlife habitat.

From the City's perspective, considerable public dollars have already been invested in planning for and constructing infrastructure (transportation, sewer, water, storm drainage, utilities) to serve buildable land in Springfield. The return on public investment would be reduced in proportion to the amount of open space land that cannot be developed or used for active recreational use, due to wetland and riparian resource conservation.

However, most of these economic impacts will likely occur whether or not each wetland or riparian resource site is locally regulated, because of state and federal avoidance and mitigation requirements. While locally *significant* wetlands are regulated by state and federal standards anyway, local regulations could require that the environmental and social functions and values of resource sites be considered in the public facilities design process. This would probably translate into increased design, construction and maintenance cost.

Social Consequences

The social consequences of fully protecting wetlands and riparian areas can be made positive through appropriate design of planned public facilities. On the positive side, the public would benefit from conservation of resource areas because natural, urban open space would be conserved. On the other hand, wetland avoidance and mitigation for public facilities costs public tax dollars. Overall, taxes could increase to support more environmentally sensitive design and construction of planned public facilities.

On the negative side, if planned public facilities could not be constructed to serve existing and planned growth, the social consequences of resource conservation would be serious and adverse. Public facilities projects are essential to serving existing and planned population and employment growth in the city. Conserving wetlands and riparian areas could mean decreasing the amount of buildable land inside the current Urban Growth Boundary, and slightly less efficient service provision if expansion of the UGB to had to occur sooner. Out-of-direction

travel to avoid resource sites, and associated pollution and traffic impacts could be slightly increased.

The OFWAM analysis describes the social qualities of each wetland and many riparian areas in this category that would be compromised by public facilities construction and maintenance. Urban educational opportunities and aesthetic values are especially important when considering conflicts with removal of open space. The OFWAM analysis includes specific measures for educational potential, visual/aesthetic quality, and recreational opportunities. The social consequences of conserving the wetlands and riparian areas are that the qualities that help make each resource site significant would be maintained. Wetlands and riparian areas can also play an integral role in the development and implementation of a comprehensive stormwater management/resource management/open space program.

Energy Consequences

Energy consequences of wetland and riparian conservation are also mixed, but are tilted somewhat to the negative. Connecting streets must jog or not be constructed at all to avoid resource sites, which means increased out-of-direction travel and slower traffic in most cases. Avoidance of streambeds in the construction of sewer lines often means more pump stations, which requires more energy. On the other hand, integration of resource areas into area-wide drainage programs would be much more energy efficient than filling wetlands and riparian areas and constructing closed conduit systems. Other energy consequences counter-balance each other, as described in other supplemental ESEE.

Consequences of Limiting Conflicting Public and Transportation Facilities

Environmental Consequences

The OFWAM analysis describes the environmental qualities of each wetland and many riparian areas in this category, which would be partially retained by allowing public and transportation facilities where no reasonable alternative exists, and with appropriate impact reduction standards. Where streets can jog in one direction or another to skirt the edge, rather than the center, of a wetland complex this should be considered. With impact reduction, this would allow most wetland functions and values to be retained.

The site-specific ESEE analyses note several instances where new streets are proposed through significant wetland and riparian areas, both in residential and industrial areas. In such situations, resource values would be substantially reduced by street construction, even with impact reduction.

Economic Consequences

Several of Springfield's planned streets and utilities are shown as running directly through locally significant wetlands. The limited protection option allows public facilities, including streets, to be constructed consistent with existing plans – where no reasonable alternative exists.

However, it is likely that local transportation planners did not take resource lands and mitigation costs into consideration at the time these plans were developed.

Since wetland and riparian mitigation typically costs typically run in the \$60- \$100,000 per acre range, it would may be worthwhile to re-visit some street locations in light of the ESEE benefits that resource areas provide, as well as the cost of mitigation. For the agency constructing the public facility, it could be more economical to construct through resource areas, because these undeveloped areas often provide the most direct and least costly (per pipe or street mile) alternative. In many cases, the only other alternative would be to construct the street through existing industrial, commercial or residential development – which might not be considered a as “reasonable.” Thus, from a city investment standpoint, the most economical option may be going through the wetland or riparian site, while meeting the substantial public costs necessary to meet DSL mitigation requirements, and to replicate the needed functions of the resource.

From the property owner’s point of view, increased transportation access is normally a benefit. However, as noted in several site-specific ESEE analyses, once the public street is constructed and resource impact reduction occurs (especially if the mitigation is “on site”), there may be little room left for residential, commercial or industrial development. In such situations, the property’s value is twice reduced: first from lost of buildable area to street right-of-way, and second, the loss of buildable area to on-site mitigation, which in most cases, is preferred. In such situations, the property owner could opt to sell the entire parcel to the agency constructing the road, rather than attempt to develop what’s left of a parcel with a new road and resource mitigation site. Thus, from the perspective of achieving the highest and best use of a particular industrial, commercial or residential property, it may make sense to consider not extending the street through some wetland and riparian sites, and allow the property owner to develop portions of the site without resource conflicts.

On the other hand, potential costs for storm water management, flood control and federally mandated water quality improvement program could decrease if wetlands and riparian resources are not impacted or only partially impacted. Wetlands and riparian sites should be viewed as part of the storm water management system; often, when wetlands are destroyed, their functions must be re-created as sumps, or artificial detention and water quality ponds, at considerable public expense. Springfield is facing major costs in meeting federal NPDES permitting requirements, costs that could increase if wetland and riparian water quality functions are lost. Flood insurance rates may also increase in the future, based on flood studies that may have to be revised because they under-estimated urban run-off rates.

Social Consequences

Springfield’s planned street and utility system has been designed to provide direct, functional routes to minimize facility construction and maintenance costs, and to avoid acquisition of developed industrial, commercial and residential property. Minimizing public costs, reducing vehicle miles traveled, and reducing the loss of established homes and businesses all have positive social value.

On the other hand, wetlands and riparian corridors in residential areas provide visual relief from uninterrupted development, and they make much better neighbors than major streets in residential areas. Thus, there can be positive social benefits associated with maintaining the resource site and not building the street through residential areas. This argument is less compelling for industrial and commercial areas, where efficient access probably has more social utility than maintaining resource areas.

In some cases, the extremes discussed above could be avoided through appropriate location and design of planned public facilities. By jogging streets to avoid wetlands and riparian areas, the monotony of long, straight streets through undifferentiated neighborhoods could be avoided. Conserved resource sites provide visual relief for commuters, businesses and residents alike. A sanitary sewer project through a drainage corridor can have positive social and educational benefits (in addition to providing a basic service), by constructing pedestrian pathways as part of the project. Even water reservoirs can be attractively designed to blend in with the natural environment, rather than contrasting with it.

Energy Consequences

The energy consequences of allowing public and transportation facilities to be routed through resource sites – where there are not reasonable alternatives and with environmental impact reduction – are generally positive. Simply put, out-of-direction travel increases energy usage. The decrease in travel distance needs to be weighed against energy conservation benefits associated with wetlands and riparian vegetation (i.e., temperature modification, shade, reduced heat reflection from impervious services).

Parks and Recreational Uses

The Metro Plan includes a “Parks and Open Space” designation that applies to public parks and open space. Parks are discretionary uses in Springfield’s residential zones. Parks are permitted outright in most commercial zones. It is a common misconception that wetland and riparian resources sites are protected from development by virtue of their being located within a park. Although resource values and park uses can co-exist in an urban setting, recreational use of wetland and riparian resource sites do have adverse impacts.

Conflicting Land Uses

- A. Recreational buildings and accessory structures such as restroom facilities and parking lots;
- B. Developed parks, including such facilities as tennis courts, ball diamonds and picnic grounds; and
- C. Passive parks, including facilities such as pedestrian and bicycle trails, access roads, viewing stations and parking lots.

Conflicting Land Use Activities

- A. Construction impacts, including short term impacts (noise, runoff, erosion, disruption of vegetation, etc.) resulting from construction of conflicting uses;
- B. Water quality impacts, including surface water runoff, runoff from streets and parking lots, and fertilized and sprayed lawns and gardens; and
- C. Outdoor lighting, which could adversely affect wildlife.

8.6 ESEE Consequences of Allowing Conflicting Vegetation Removal and Grading

Native Vegetation Removal and Grading Supplemental ESEE Analysis

Removal of native vegetation, whether as a result of clearing, excavation, commercial harvesting, or farming, can adversely affect wetland functions and values. All wetland and riparian resource sites are potentially affected by vegetation removal and excavation. This focus of this analysis is on removal of *native plant species*. Removal of non-native (introduced) species, such as Himalayan blackberries, is not considered a conflicting use; indeed it is usually beneficial to wetland resources, if done properly.

DSL regulations limit wetland fill and removal, but not vegetation removal. Outside of riparian areas associated with fish-bearing streams, existing regulations limit vegetation removal primarily through the land use review process (land divisions, site plan review, planned developments). Article 38—Tree Felling Standards limits the removal of trees and vegetation with a diameter of 5 inches or more. The intent of the Article is to help retain natural vegetation, natural water features, natural water features, scenic quality, wildlife habitat and archaeological sites to the maximum extent possible on urbanizable land. Timber harvesting is secondary to preservation of other natural resources and cultural values within the Urban Growth Boundary. Significant tree removal is only permitted when specific development plans have been approved by the City, consistent with plan policies and City Development regulations.

Land Use Activities Conflicts

- A. Tree-cutting and clearing of native vegetation, which destroys habitat, destroys scenic value and increases erosion;
- B. Grading, fill and removal whether related to permitted construction or not.
- C. Spraying for disease and weed control, which may destroy or impair native vegetation and habitat, and may sicken or kill wildlife; and
- D. Road construction, construction of staging areas and impacts from native vegetation removal.

In urban areas, every site has conflicting uses. Even passive park areas, which are intended to “preserve” the resource, usually involve some level of development to allow for public access. Therefore, to some extent, all resource sites are impacted by conflicting uses, although the level of conflict allowed is highly restricted.

Consequences of Prohibiting Native Vegetation Removal and Grading

This supplemental ESEE analysis looks at the consequences of fully protecting wetland and riparian areas and their associated impact areas from *all* grading and vegetation removal. Generally, the environmental consequences would be positive, but economic consequences (especially for individual property owners) would be negative, due to loss of buildable land.

Environmental Consequences

Urban wetlands and riparian areas should be considered as part of a much larger ecological system of wetlands, stream corridors and vegetated uplands. The intrinsic value of any particular resource site is affected by the quality and quantity of native vegetation cover. Most of the functions and values of wetland and riparian resources are adversely affected by loss of native vegetation.

Ecological integrity, wildlife habitat, visual/aesthetic quality, sediment trapping, and nutrient attenuation are all dependent upon maintenance of native vegetation. In fact, a critical focus of many resource restoration projects is the removal of non-native wetland and riparian plants and replacement with native species. One of the greatest threats to native species is habitat loss. Invasive non-native species are a major component of habitat loss, which in turn leads to loss of biodiversity, often causing local extinctions of native plants and animals.

Maintenance of wetland and riparian vegetation contributes directly to improved water quantity, quality, and fish and wildlife habitat. The retention of native vegetation is a critical element in these resource functions and values. Wetlands and riparian areas decrease flooding potential by providing flood water storage, dissipating the force of moving water, and by allowing storm water to seep gradually into the ground rather than moving rapidly over the surface. Without native vegetative cover, the potential for flood damage and erosion increases. Vegetated soils allow water to filter downward to the groundwater reservoir, adding volume to surface waters during low flow periods. Wetlands allow sediment to settle out and be trapped by vegetation before it reaches streams. Native vegetation also absorbs chemicals and heavy metals, reducing water pollution. Thus degradation of wetlands and riparian caused by vegetation removal, contributes to the direct loss of resource functions and values.

When native vegetation is removed, the value of the wetland for habitat decreases dramatically. Spraying, cutting, or scraping of vegetation is often considered to be “routine maintenance”, but has the effect of changing the vegetative regime and habitat qualities of wetlands and riparian areas. The removal of native vegetation usually results in replacement with introduced and hardier species.

The environmental values that would be retained by conservation of wetlands are described above, and are extremely positive. The Oregon Freshwater Wetland Assessment Methodology (OFWAM) analysis describes the environmental qualities of each wetland and many riparian in this category, which would be largely retained by prohibiting vegetation removal on and near wetlands. Even with "full protection" of wetland and riparian vegetation, activities associated with development (pets, children, ATVs, run-off, etc.), which cannot be fully controlled by land use regulations, could result in loss or degradation of resource vegetation over time.

The OFWAM analysis describes and analyzes nine criteria for wetland evaluation and characterization. That report includes four specific biological measures that are compromised by development: wildlife habitat, fish habitat, water quality, and hydrological control. These four criteria are evaluated in the following manner: **wildlife habitat** evaluates the habitat diversity for species generally associated with wetlands and wetland edges; **fish habitat** evaluates how the wetland contributes to fish habitat in streams, ponds or lakes associated with the wetland; **water quality** evaluates the potential of a wetland to reduce the impacts that excess nutrients in storm water runoff have on downstream waters; **hydrological control** evaluates the effectiveness of a wetland in storing floodwaters and reducing downstream flood peaks.

The Wildlife Habitat Assessment (WHA) was used to evaluate riparian sites in terms of relative quantity, quality, diversity and seasonality of the components that appear at the site. Also considered were the degree and permanence of physical and human disturbance, proximity to other water-related and upland areas, and unique features including wildlife, flora and rarity of habitat.

The environmental consequences of fully protecting wetland and riparian areas and their impact area from all grading and native vegetation removal would be positive.

Economic Consequences

Prohibiting all grading and native vegetation removal within wetlands and riparian areas and their impact areas would have some direct negative economic consequences to the property owner (loss of buildable land) and indirect economic consequences to the community (lower land use efficiency and higher per unit costs for providing public facilities and services). Prohibiting all grading and vegetation removal within the impact area could also increase site preparation construction costs.

There are a number of positive economic consequences associated with completely prohibiting vegetation removal or excavation within a resource site and its impact area. To the extent that wetlands and riparian sites contribute to the economic value of a property (scenic, open space, etc.), this value could be diminished if native vegetation was removed or the site converted from a natural state. Conserving native vegetation can have positive economic value, by minimizing erosion and maximizing water quality, which can increase the economic value of urban property. Especially in residential areas, prohibiting vegetation removal within resource sites and their impact areas would have positive economic impacts for neighboring residential property owners, whose properties would benefit from nearby open space.

It is useful to look at the economic consequences of conserving resource sites from different points of view. Often, impacts are less significant at the study area level than from the point of view of the individual property owner. The ESEE analyses for each individual significant wetland and riparian resource site addresses the special characteristics of each site in relation to property owner interests.

On the other hand, developers and homeowners increasingly recognize the economic value of natural areas. It is not uncommon for developers, homeowners or governments to place "conservation easements" over wetlands and riparian corridors to ensure their maintenance in a natural state. As public attitudes towards wetlands and riparian resources change, native vegetation removal will have more pronounced and adverse economic impacts on neighboring property owners.

Social Consequences

The social consequences of protecting all native vegetation on resource sites and their respective impact areas are mixed. On the positive side, wetland and riparian vegetation could add amenity value to residentially developed land. Social consequences (*natural* open space, views, undisturbed wildlife habitat areas close to population centers) would be positive as a result of conserving the resource vegetation. Resource sites *with native vegetation* provide educational opportunities for those living near them, which would be maintained.

On the negative side, conservation of native vegetation precludes a "park-like" appearance, which has its own social appeal. Wetlands, which are mowed and maintained primarily for human use, could have increased open space value to some people. In addition, a prohibition on removal of native vegetation can conflict with the need to mow or otherwise remove vegetation as a fire protection measure.

The OFWAM report describes and analyzes the social qualities of each wetland in this category, which would be preserved by retaining native vegetation. That report includes specific measures for educational potential, visual/aesthetic quality, and water based recreational opportunities. The social consequences of conserving resource vegetation would be virtually the same as the consequences of conserving the wetland itself. In many cases, it is the quality and quantity of the wetland and riparian vegetation that makes the resource site *significant*.

Energy Consequences

The energy consequences of native vegetation conservation are not major. From a solar perspective, it is possible that vegetation from forested wetlands and riparian areas could shade south-facing windows of houses, thus reducing solar access, although this is less likely with taller buildings.

On the negative side, conservation of resource vegetation would have a moderating effect on climate. Trees provide shade, which cool buildings in the summer and serve as a windbreak in the winter. At a macro level, plants absorb sunlight and transpire during the growing season, slightly reducing ambient air temperatures. Wetlands and riparian areas with *native vegetation*

provide the opportunity to experience "nature" directly and locally, without having to utilize energy to reach the countryside.

Consequences of Fully Allowing Native Vegetation Removal and Grading

Environmental Consequences

Urban wetlands and riparian areas should be considered as part of a much larger ecological system of wetlands, stream corridors and vegetated uplands. The intrinsic value of any particular resource site is affected by the quality and quantity of native vegetation cover. Most of the functions and values of wetland and riparian resources would be adversely affected by loss of native vegetation.

Ecological integrity, wetland wildlife habitat, visual/aesthetic quality, sediment trapping, and nutrient attenuation are all dependent upon maintenance of native vegetation. In fact, a critical focus of many wetland impact reduction projects is the removal of non-native plants and replacement with native species. One of the greatest threats to native species is habitat loss. Invasive non-native species are a major component of habitat loss, which in turn leads to loss of biodiversity, often causing local extinctions of native plants and animals.

Retention of wetland and riparian vegetation contributes directly to improved water quantity, quality, and fish and wildlife habitat. The retention of native vegetation is a critical element in these resource functions and values. Wetlands and riparian areas decrease flooding potential by providing flood water storage, dissipating the force of moving water, and by allowing storm water to seep gradually into the ground rather than moving rapidly over the surface. Without native vegetative cover, the potential for flood damage and erosion increases. Vegetated soils allow water to filter downward to the groundwater reservoir, adding volume to surface waters during low flow periods. Wetlands and riparian areas allow sediment to settle out and be trapped by vegetation before it reaches streams. Native vegetation also absorbs chemicals and heavy metals, reducing water pollution. Thus degradation of wetlands and riparian resource sites caused by vegetation removal, contributes to the direct loss of resource functions and values.

When native vegetation is removed, the value of wetland and riparian sites for habitat decreases dramatically. Spraying, cutting, or scraping of vegetation is often considered to be "routine maintenance", but has the effect of changing the vegetative regime and habitat qualities of a resource area. The removal of native vegetation usually results in replacement with introduced and hardier species.

Springfield's OFWAM report describes and analyzes nine criteria for wetland evaluation and characterization. That report includes four specific biological measures that are compromised by development: wildlife habitat, fish habitat, water quality, and hydrological control. These four criteria are evaluated in the following manner: **wildlife habitat** evaluates the habitat diversity for species generally associated with wetlands and wetland edges; **fish habitat** evaluates how the wetland contributes to fish habitat in streams, ponds or lakes associated with the wetland; **water quality** evaluates the potential of a wetland to reduce the impacts that excess nutrients in storm

water runoff have on downstream waters; **hydrological control** evaluates the effectiveness of a wetland in storing floodwaters and reducing downstream flood peaks.

The Wildlife Habitat Assessment (WHA) was used to evaluate riparian sites in terms of relative quantity, quality, diversity and seasonality of the components that appear at the site. Also considered were the degree and permanence of physical and human disturbance, proximity to other water-related and upland areas, and unique features including wildlife, flora and rarity of habitat.

The environmental consequences of allowing native vegetation removal on wetlands and riparian sites - whether through excavation, maintenance, chemical or mechanical removal - are that the qualities that make each resource significant would be lost.

Economic Consequences

Allowing unrestricted grading and vegetation removal could marginally reduce site preparation construction costs, but otherwise has few positive economic consequences. Unrestricted grading activities would likely have adverse off-site economic consequences, due to increased erosion and possible alteration of natural drainage systems. Removal of native vegetation may result in use of property for lawns or gardens. Where a more manicured appearance is perceived as a desirable property trait, there could be a slight increase property values, although maintenance costs also increase.

On the other hand, developers and homeowners increasingly recognize the economic value of natural areas. It is not uncommon for developers, homeowners or governments to place "conservation easements" over wetlands and riparian corridors to ensure their maintenance in a natural state. As public attitudes towards resource areas change, native vegetation removal will have more pronounced and adverse economic impacts on neighboring property owners.

Social Consequences

The consequences of allowing unrestricted vegetation removal and/or excavation on social values associated with significant wetland and riparian resource sites are largely adverse. Educational and amenity values of affected resource areas would be lost. On the positive side, native vegetation removal allows for creation of a more "park-like" appearance, which has its own social appeal. Wetlands that are mowed and maintained primarily for human use could have increased open space value to some people, and increased fire resistance.

On the other hand, retention of native vegetation in urban wetland and riparian resource areas is what makes such sites *valuable* for those who live and work nearby. Over the last decade, the public attitude toward resource conservation has changed dramatically. Neighborhood property owners and associations, joining with environmental groups, have opposed developments that result in a loss of wetland and riparian values. Citizens have a much greater awareness, and place a much higher value, on conserving both the natural appearance and wildlife habitat values of resource sites.

Energy Consequences

The energy consequences of unrestricted native vegetation removal and grading would result in the loss of the moderating effect that water areas and vegetation have on local climate. Trees provide shade that cools buildings in the summer and serve as a windbreak in the winter. Plants absorb sunlight and transpire during the growing season, slightly reducing ambient air temperatures. Wetlands also provide local "natural" opportunities, thus reducing the need to utilize energy to reach outdoor experiences.

Consequences of Limiting Native Vegetation Removal and Grading

This supplemental ESEE analysis considers the consequences of limiting vegetation removal and grading as prescribed in proposed wetland regulations. Vegetation removal and grading would be limited for wetlands and riparian areas and their recommended setback areas (not to be confused with the impact area), and public facilities would be permitted with impact reduction (where no reasonable alternative exists).

Environmental Consequences

Most of the environmental values discussed in the full protection option would be retained under this option – provided that full compensation for reduced resource values occurred. For lower quality wetlands and riparian sites, the marginal environmental value associated with restricting development within near the resource is relatively small. For high value wetlands, the environmental consequences of encroaching on the resource would be greater. The OFWAM analysis and WHA report includes specific measures for ecological integrity, wetland wildlife habitat, sediment trapping, and aesthetics. With impact reduction, most of these qualities can be retained.

Economic Consequences

Limiting vegetation removal and grading to the area outside the wetland setback (except for public facilities) would have direct adverse economic consequences for the property owner, because buildable land area would be restricted. Economic impacts would be less, however, than under the “full resource protection” option. Removal of native vegetation may result in use of property for lawns or gardens. Where a more manicured appearance is perceived as a desirable property trait, there may be a slight increase property values.

On the other hand, the limited protection option addresses several adverse economic consequences associated with unrestricted vegetation removal or excavation. To the extent that wetlands contribute to the economic value of a property (scenic, open space, etc.), this value would be seriously diminished if native vegetation was completely removed or the site converted from a natural state. Conserving native vegetation can have positive economic value, by minimizing erosion and maximizing water quality, which can increase the economic value of urban property.

It is useful to look at the economic consequences of conserving the significant wetland and riparian resource site from different points of view. Often, impacts are less significant at the study area level than from the point of view of the individual property owner. The ESEE analysis for each *individual* significant wetland resource site addresses the special characteristics of that site in relation to property owner interests.

Social Consequences

The social consequences of conserving native vegetation on significant wetland resource sites are mixed. On the positive side, wetland vegetation could add amenity value to residentially developed land. Social consequences (*natural* open space, views, undisturbed wildlife habitat areas close to population centers) would be positive as a result of conserving the wetland vegetation. Wetlands *with native vegetation* provide educational opportunities for those living near them, which would be maintained.

On the negative side, conservation of native vegetation precludes a "park-like" appearance, which has its own social appeal. Wetlands, which are mowed and maintained primarily for human use, could have increased open space value to some people, and increased fire resistance.

The OFWAM analysis describes and analyzes the social qualities of each wetland and many riparian areas in this category, which would be largely conserved by retaining native vegetation. That report includes specific measures for educational potential, visual/aesthetic quality, and water based recreational opportunities. The social consequences of conserving wetland and riparian vegetation are virtually the same as the consequences of conserving the resource itself. In many cases, it is the quality and quantity of the wetland and riparian vegetation that makes the resource site *significant*.

Energy Consequences

The energy consequences of native vegetation conservation are not major. From a solar perspective, it is possible that vegetation from forested wetlands and riparian corridors could shade south-facing windows of houses, thus reducing solar access, although this is less likely with taller buildings. On the positive side, conservation of vegetation would have a moderating effect on climate. Trees provide shade that cools buildings in the summer and serve as a windbreak in the winter. At a macro level, plants absorb sunlight and transpire during the growing season, slightly reducing ambient air temperatures. Wetlands and riparian areas with *native vegetation* provide the opportunity to experience "nature" directly and locally, without having to utilize energy to reach the countryside.

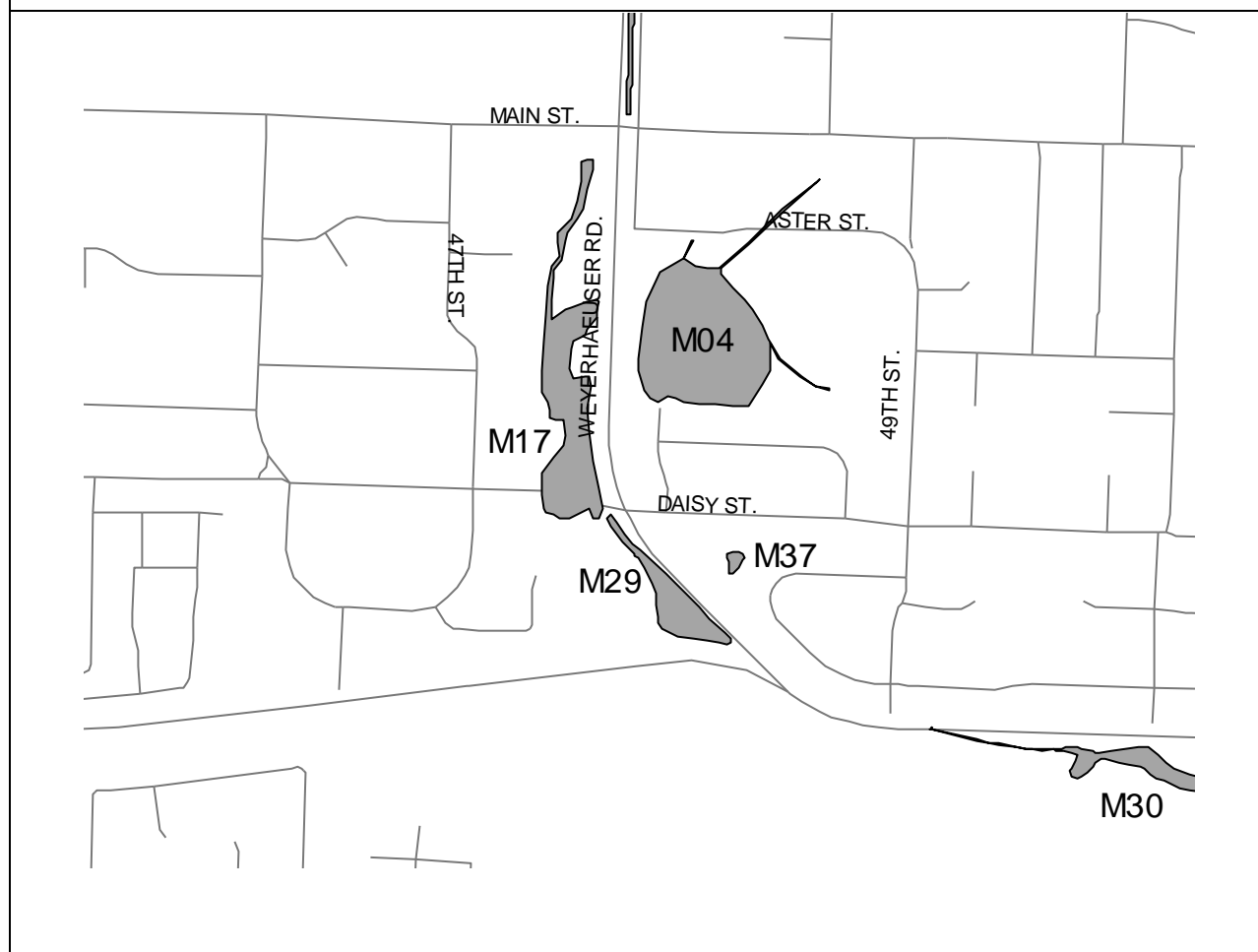
9.0 Site-Specific ESEE Evaluation

The following site-specific Environmental, Social, Energy, and Economic (ESEE) analysis addresses how conflicting uses, if allowed, could adversely impact each significant wetland or riparian resource site as well as how protecting each resource site may impact those uses. The general consequences of protecting significant resource sites are addressed Section 8.1-8.6 of this report.

9.1 Wetland Resource Sites

Site: M04 Cascade Drive-in	Acres: 5.03	OFWAM: Special Interest for Protection- site is inhabited by a federally listed endangered plant species. High Quality Wetlands	Springfield Waterways Channel Assessment: Not Assessed
	Type: PEM		Inventoried Riparian Resource? No.

Goal 5 Recommendation: Limit conflicting uses. Implement the protections provided in the development agreement that was approved by DSL and the Corps of Engineers to limit conflicting uses and protect the habitat for a federally protected plant specie.



Description:

Wetland M4 is 5.03 acres and classified as PEM. The site is an abandoned drive-in theater that was highly disturbed from past agricultural uses and grading for the drive-in operation. The site has since been developed as an assisted living facility and post office. The development was allowed under a plan approved by the Division of State Lands. The site was drained to the south and west by deep drainage ditches.

The wetland is roundish in shape and located in the southwest corner of the site. Sparse Oregon ash and big leaf maple trees were scattered throughout the site. The herbaceous layer is dominated by tufted hair-grass (*Deschampsia cespitosa*), tall fescue, bulrush (*Scirpus* sp.), camas (*Camassia quamash*), creeping buttercup and gumweed (*Grindelia integrifolia*). Four individual plants of rare Bradshaw's lomatium (*Lomatium bradshawii*) were observed on this site. Soils are dark in color with mottling and some surface staining indicating the seasonal presence of surface water in depressions. Hydrology was directly observed in May, 1993. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Wetland and Impact Area Summary

Wetland Acreage	5.03
Impact Area Acreage	12.33
Combined Wetland and Impact Area	17.36
Vacant Acres within the Combined Area	2.42
Number of Parcels Affected	22
Combined Parcel Acreage	33.05

Conflicting Uses by Acre and Zoning District

SITE ID	CC	LDR	HI	TOTAL ACRES
M-04*	5.03	0	0	5.03
M-04 Impact Area	9.68	1.55	1.1	12.33
Total	14.71	1.55	1.1	17.36

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	CC	LDR	HI	TOTAL ACRES
M-04*	.02	0	0	0
M-04 Impact Area	2.4	0	0	0
Total	2.42	0	0	0

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

The wetland area is protected by provisions of a development agreement that set aside much of the wetland for protection, including those areas that provide habitat for known occurrences of Bradshaw's lomatium.

Site Specific ESEE Analysis for M-04

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

Fully allowing conflicting commercial and residential uses would mean the loss of a known habitat area for a federally protected specie. The wetland's water quality function is degraded. Its hydrologic control function is also degraded. The site has potential for enhancement.

A policy of limiting conflicting uses has been adopted by federal, state and local officials. The resource site is currently protected through a development agreement that allows development around the wetland, but protects it from fill and disruption of its hydrology. Some enhancement measures were approved as part of the development agreement. The Oregon Division of State Lands and US Army Corps of Engineers reviewed and approved development plans for the surrounding area.

Social Consequences

The wetland was rated as not aesthetically pleasing and not appropriate for recreational or educational uses by the OFWAM analysis. Limiting conflicting residential and commercial uses has allowed for the construction of an assisted living facility for the elderly and infirm. A post office has also been located on the site. These facilities provide a public benefit. Limiting conflicting uses under the approved development agreement will protect the site and allow residents observe and enjoy the resource.

Economic Consequences

Fully protecting M04 from conflicting uses would mean the loss of 2.42 acres of vacant commercial land within the combined wetland and impact area boundaries. Limiting conflicting uses would allow some development to occur while protecting the majority of resource functions and values.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses. Implement the protections provided in the development agreement for Jenna Estates that was approved by DSL and the Corps of Engineers to limit conflicting uses and protect the habitat for the listed plant specie. Continue coordination with the Oregon Division of State Lands and the Corps of Engineers to assure that as the area surrounding the M-04 develops, that approved in the development agreement are enforced.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	CC	TOTAL ACRES
M-04	0	0
M-04 25-ft. Setback	0	0
Total	0	0

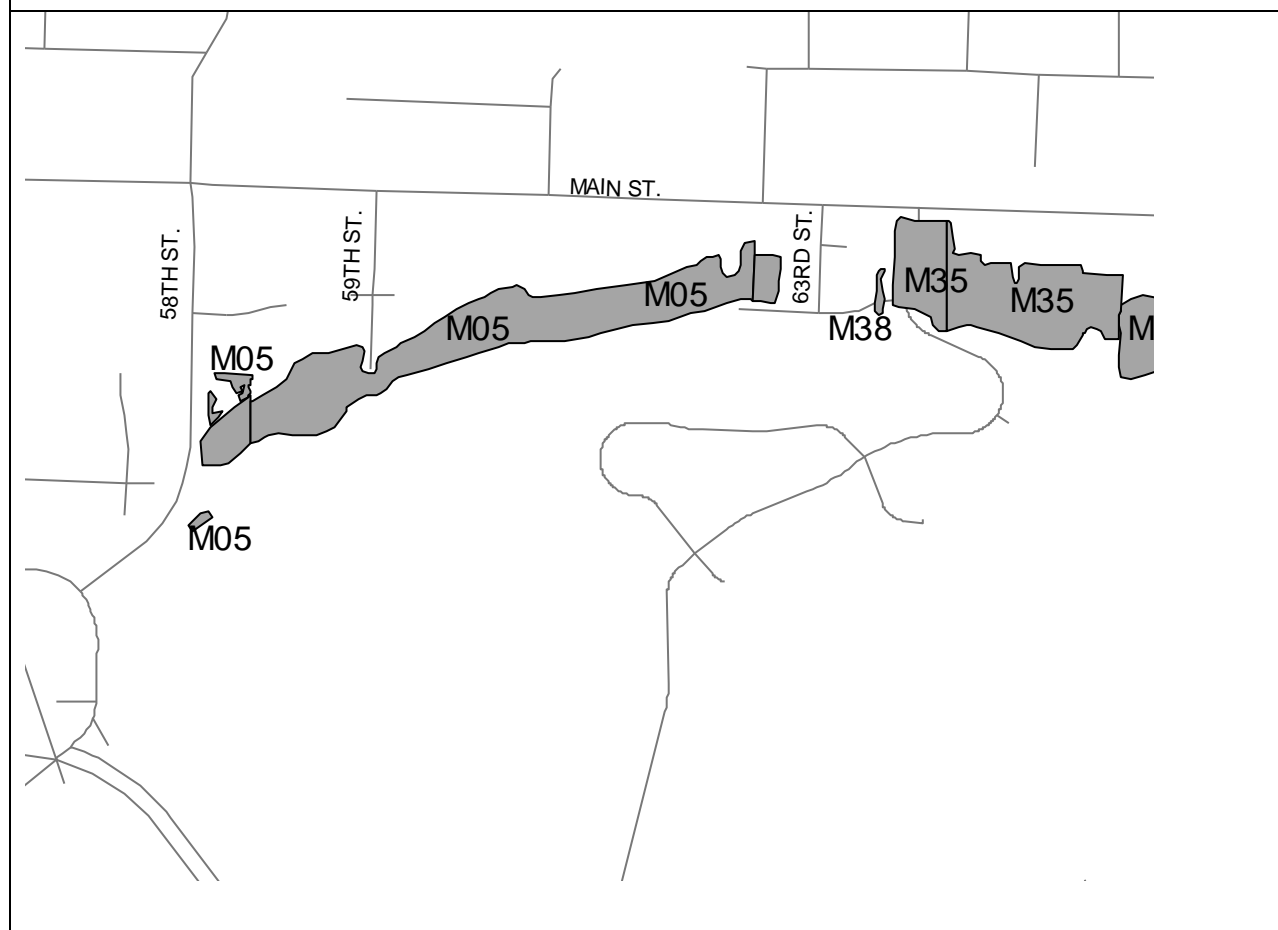
None of M-04 is classified as vacant by the Lane County Assessor's Office. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the resource area could be preserved or enhanced

Reduction in the Buildable Land Inventory:

The resource, M-04 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory.

Site: M05 Aster St. Wetland	Acres: 9.12	OFWAM: Provides diverse wildlife habitat; Hydrologic control function is intact (flood retention). High Quality Wetlands	Springfield Waterways Channel Assessment: Aster Channel 7.2 (Fair)
	Type: PFO PSS PEM		Inventoried Riparian Resource? No.

Goal 5 Recommendation: Limit conflicting uses that may impact the wetland. Maintain a 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.



Description:

Wetland M5 is 9.12 acres and classified as PFO, palustrine scrub-shrub (PSS) and PEM. The wetland is located at the foot of Potato Hill (south of Main Street and north of Potato Hill). Hydrology was directly observed in May, 1993. Soils were dark in color with mottles. Overstory dominant species include Oregon ash and black cottonwood. Understory dominants include

Himalayan blackberry (*Rubus discolor*), rose (*Rosa* sp.) and Douglas' spirea (*Spiraea douglasii*). Dominant ground cover species included tuftedhair-grass, big-leafed lupine (*Lupinus polyphyllus*), red fescue, meadow foxtail, soft rush, creeping buttercup and sedge (*Carex* sp.). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Additional information from the *Inventory and Channel Assessment Report for Springfield Waterways*

Aster Channel

Water/Bank Profile details

- Channel profile is mostly ponded with one U-shaped reach. Bank slopes are between 6% and 52% with an average of 19.5%.
- Bed material consists primarily of silt/sand/clay.
- Culverts and fences were recorded as in-channel structures.

Riparian Profile details

- Plant community of hardwoods and one reach that is grass/field.
- Dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry).
- No co-dominant invasive plant species was recorded.
- Invasive plant species listed as present: *Holcus lanatus* (Velvet Grass), *Rubus laciniatus* (Evergreen Blackberry), and *Convolvulus* sp. (Morning Glory/Bindweed).
- Others invasive plant species observed in the system: *Phalaris arundinacea* (Reed Canary-grass), *Hedera helix* (English Ivy), *Phalaris aquatica* (Harding grass), *Parentucellia viscosa* (Parentucellia), *Buddleia davidii* (Butterfly bush), and *Mentha pulegium* (Penny royal).
- No invasive animals/amphibian was recorded.
- No damage by invasive animals/amphibian was recorded.
- No wildlife was observed.
- No wildlife evidence was recorded.
- *Camassia quamash* (Common Camas), *Epilobium densiflorum* (Dense Spike-Primrose), *Eryngium petiolatum* (Rush-leaf Coyote thistle), and *Juncus patens* (Spreading Rush) were recorded for seed collection.
- Neighborhood education and riparian buffer enhancement were recorded for project opportunities.
- A chicken house, and a property owner driving a tractor through the channel was noted in the comments section.

Scoring and Overall Health rating details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding each health rating for each reach together then dividing it by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	3.2
Water Appearance	0 dry
Nutrient Enrichment	0 dry
Bank Stability	9.2
Canopy Density/Cover	5.6
Invasive Damage – P	6.2
Invasive Damage – A/A	10.0
Waste Presence	8.8
Barriers to Fish (SBW)	0 N/A
Insect/Invert Habitat (SBW)	0 N/A
In-stream Fish Cover (SBW)	0 N/A
Average Overall Health Rating	7.2 = Fair

Wetland and Impact Area Summary

Wetland Acreage	9.12
Impact Area Acreage	19.43
Combined Wetland and Impact Area	28.55
Vacant Acres within the Combined Area	8.61
Number of Parcels Affected	16
Combined Parcel Acreage	27.31

Conflicting Uses by Acre and Zoning District

SITE ID	CC	LDR	MDR	NC	TOTAL ACRES
M-05	0	4.55	4.15	.42	9.12
M-05 Impact Area	.05	8.36	10.55	.47	19.43
Total	.05	12.91	14.7	.89	28.55

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	CC	LDR	MDR	NC	TOTAL ACRES
M-05	0	2.04	1.09	0	3.13
M-05 Impact Area	0	3.28	2.2	0	5.48
Total	0	5.32	3.29	0	8.61

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for M-05

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

M-05 is a high quality ash-forested wetland that provides diverse wildlife habitat. While the water quality function of the wetland has been impacted, the hydrologic control function is intact. Fully allowing conflicting residential development would mean the loss of the habitat and hydrologic control functions. The natural hydrologic control could be mimicked with engineered facilities (at a cost), but the habitat values would be significantly be degraded. Limiting conflicting uses would allow for some residential infill development to occur while maintaining a significant level of wetland function.

Social Consequences

The site is aesthetically pleasing, but was not judged to be appropriate for recreational or educational use by the OFWAM analysis. If conflicting uses are fully allowed, the aesthetic value of the site could be lost.

Economic Consequences

Fully protecting the site would mean the loss of 8.61 acres of vacant residential land within the combined wetland and impact area boundaries. The lost hydrologic control function of the wetland would result in more expensive engineered facilities to retain run-off from the residential development on Potato Hill. Limiting conflicting uses could allow for most of the vacant land to be developed. If that development was tempered by low impact development practices, much of the wetland function could be preserved.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the wetland. Maintain a 25-foot development setback from the wetland. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	MDR	TOTAL ACRES
M-05	2.04	1.09	3.13
M-05 25-ft. Setback	.53	.37	.9
Total	2.57	1.46	4.03

About 3.13 acres of M-05 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 11 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect .9 acres of vacant residential land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space that is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

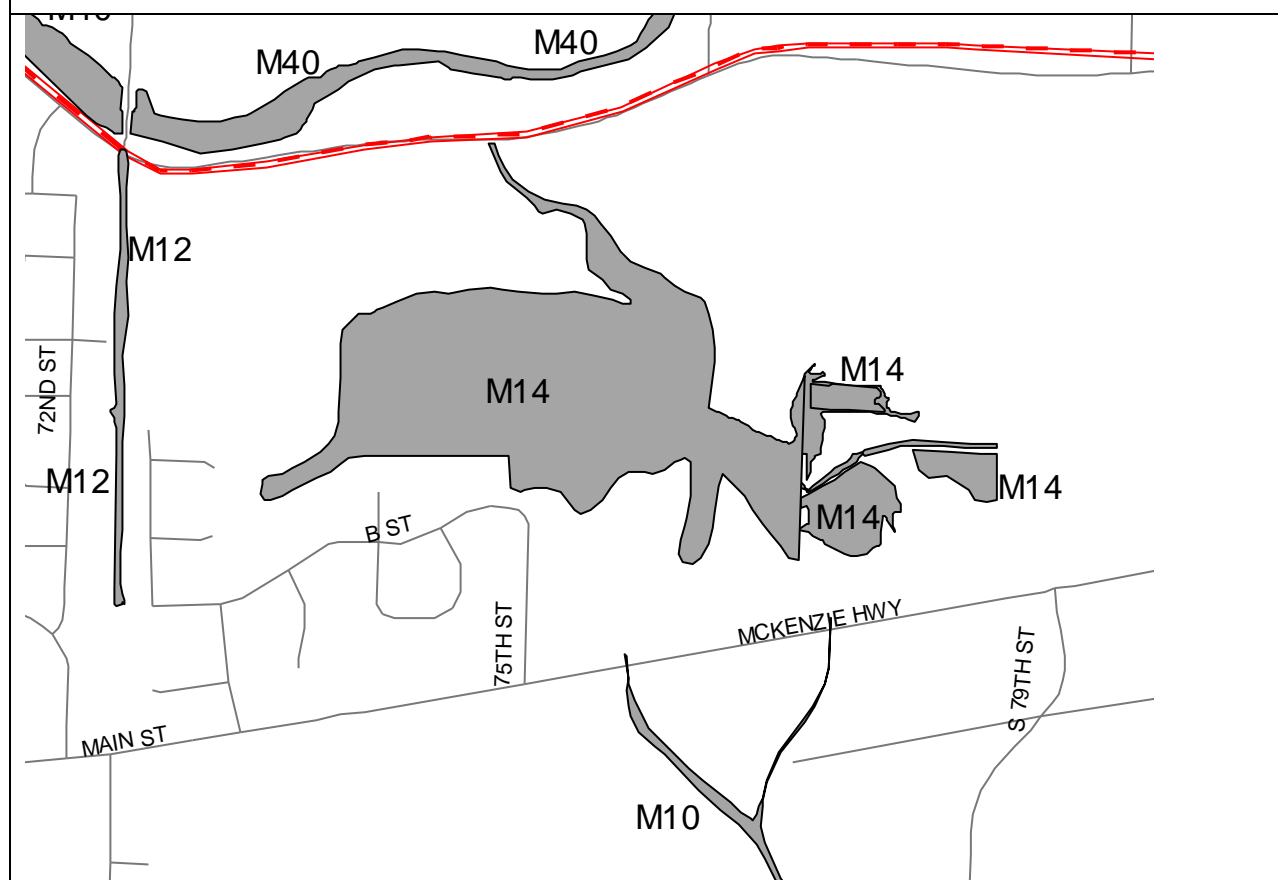
Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

M-05 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about .9 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site: M14 75th Street Wetland	Acres: 30.73	OFWAM: Provides diverse wildlife habitat; Wetland is aesthetically pleasing.	Springfield Waterways Channel Assessment: 75 th Street Creek 6.4 (Fair)
	Type: PEM, PFO	Moderate Quality Wetlands	Inventoried Riparian Resource? Yes- S24 WHA Score: 55 High Quality Resource

Goal 5 Recommendation: Limit conflicting uses that may impact the wetland. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie within the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.



Description:

Wetland M14 is 33.45 acres and classified as PEM/PFO. The wetland is located on the east end of Springfield's UGB, just north of Main Street. The site has been historically used as a pasture for cattle and sheep. Hydrology was directly observed in an excavated drainage that traverses the wetland. Property owners stated that there is a flow control device somewhere upstream that

controls the amount of water flowing through the drainage. Direct hydrology was observed in the canal and the palustrine areas of the wetland in May, 1993. Soils were dark in color with mottles. Overstory dominant species included Oregon ash, black cottonwood and cultivated apple (*Pyrus malus*). Understory dominant species include Douglas spirea (*Spiraea douglasii*) and baldhip rose (*Rosa gymnocarpa*). Ground cover dominant species included meadow foxtail, red fescue, creeping buttercup, soft rush, velvet-grass and birds-foot trefoil (*Lotus corniculatus*). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Additional information from the *Inventory and Channel Report for Springfield Waterways*

75th Street Creek

Riparian Profile Details

- Plant community is hardwoods and grass/field with one reach being dominated by invasive species.
- Dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry) and *Holcus lanatus* (Velvet Grass).
- Co-dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry), *Holcus lanatus* (Velvet Grass), and *Solanum dulcamara* (Nightshade).
- Invasive plant species listed as present: *Holcus lanatus* (Velvet Grass), *Hedera helix* (English Ivy), *Dipsacus fullonum* (Teasel), and *Rubus armeniacus* (Armenian Blackberry).
- Others invasive plant species observed in the system: *Convolvulus sp.* (Morning Glory/Bindweed), *Rubus laciniatus* (Evergreen Blackberry), *Phalaris arundinacea* (Reed Canary-grass), and *Buddleia davidii* (Butterfly bush).
- No invasive animals/amphibian was recorded.
- No damage by invasive animals/amphibian was recorded.
- No wildlife was observed.
- Deer and Coyote scat was recorded as wildlife evidence.
- *Camassia quamash* (Common Camas) was identified for seed collection.
- Riparian buffer enhancement and bank stabilization were recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding each health rating for each reach together then dividing it by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	6.0
Water Appearance	0 dry
Nutrient Enrichment	0 dry
Bank Stability	4.0

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Canopy Density/Cover	6.0
Invasive Damage – P	5.4
Invasive Damage – A/A	10.0
Waste Presence	7.9
Barriers to Fish (SBW)	8.9
Insect/Invert Habitat (SBW)	6.7
In-stream Fish Cover (SBW)	2.6
Average Overall Health Rating	6.4 = Fair

Wetland and Impact Area Summary

Wetland Acreage	30.73
Impact Area Acreage	34.82
Combined Wetland and Impact Area	65.55
Vacant Acres within the Combined Area	33.53
Number of Parcels Affected	36
Combined Parcel Acreage	148.2

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
M-14	24.56	6.17	30.73
M-14 Impact Area	18.67	16.15	34.82
Total	43.23	22.32	65.55

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
M-14	20.97	.93	21.9
M-14 Impact Area	8.63	3.00	11.63
Total	29.6	3.93	33.53

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

75th Street Creek is a drainage channel that runs north-south through the middle of the wetland, draining to Cedar Creek. The channel is identified as a tributary to a water-quality limited watercourse (Cedar Creek) and is protected by a 50-foot development setback and a site plan review requirement.

Site Specific ESEE Analysis for M-14

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

M-14 is a moderate quality wetland that provides diverse wildlife habitat. The water quality and hydrologic control functions have been impacted. Fully allowing conflicting uses would mean the loss that habitat function. The site is associated with Gray Creek, a “High Quality” inventoried riparian resource site (S-24) and 75th Street Creek, a tributary to a water quality limited watercourse.

Social Consequences

The site has been judged aesthetically pleasing but not appropriate for educational or recreational uses by the OFWAM analysis. The wetland includes large tracts of both private and publicly owned land including Bob Artz Park, and School District 19 property, which seems to contradict the finding that it is not appropriate for educational and recreational uses. Fully allowing conflicting uses would degrade the aesthetic appeal of the site as well as the potential public recreational and educational uses. Limiting conflicting uses could allow public uses while minimizing degradation of M-14’s wetland function.

Economic Consequences

The site is traversed in part by Gray Creek (east-west) and the 75th Street Creek which runs north through the middle of the site and connects with Cedar Creek. 75th Street Creek is an important waterway for conveying storm water from the Thurston Hills to the south. Fully allowing conflicting uses would require engineered facilities to replace these stormwater management functions.

Fully protecting M-14 would mean the loss of 29.6 acres of vacant residential land within the combined wetland and impact area boundaries. Full protection could mean the loss of 3.93 acres of public land for school and park use as well.

Limiting conflicting uses could allow for much of the vacant land to be developed. If that development was tempered by low impact development practices, much of the wetland function could be preserved.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the wetland. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie within the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.

Recommended Program for Protection

Limit conflicting uses that may impact the wetland. Maintain a 25-foot development setback from the wetland. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
M-14	20.97	.93	21.9
M-14 25-ft. Setback	2.17	.59	2.76
Total	23.14	1.52	24.66

About 21.9 acres of M-14 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 15 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect 2.76 acres of vacant residential land. The affect of the setback on buildable land could be reduced by aligning development such that back yards and other open space is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

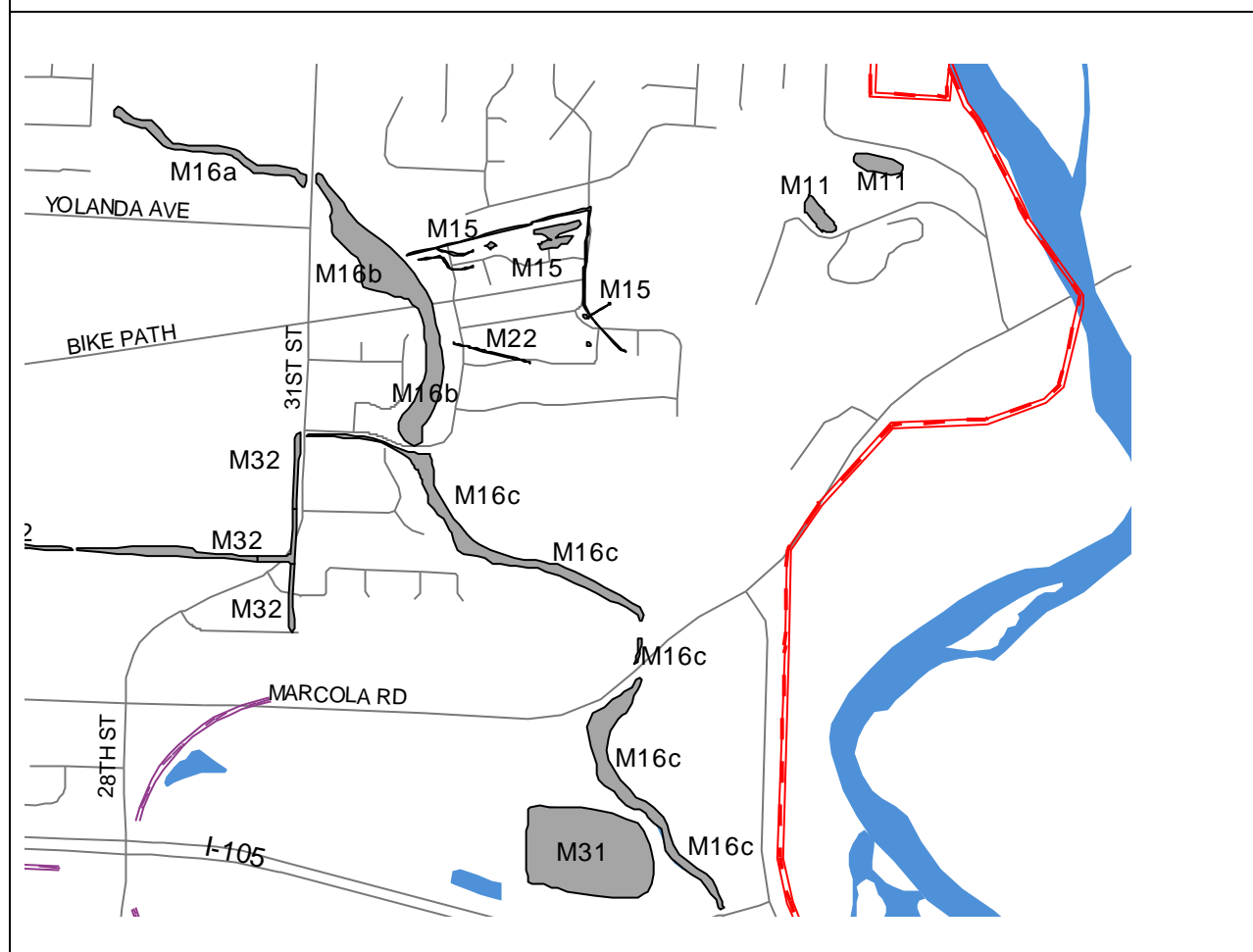
Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

M-14 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about 2.76 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site: M16 a-c Irving Slough	Acres: 12.53	OFWAM : M16a- Water quality and hydrologic functions are intact. High Quality Wetlands	Springfield Waterways Channel Assessment: Irving Slough 5.9 (Poor)
	Type: PFO, POW, RLP, RLP PEM	M16b- Hydrologic functions are intact. Moderate Quality M16c- Hydrologic functions are intact. Moderate Quality	Inventoried Riparian Resource? Yes- S20, S21 WHA Score: S20 (M16a-b): 67 S21 (M16c): 47 High Quality Resource

Goal 5 Recommendation: Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie in the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.



Description:

Wetland M16 is 13.96 acres and classified as PFO/POW/RLP/PEM. This wetland is called Irving Slough. The overstory in the forested areas was dominated by Oregon ash, black cottonwood and big leaf maple. The understory dominant species included trailing blackberry, Himalayan blackberry and willow. Ground cover dominant species included reed canarygrass (*Phalaris arundinacea*), common plantain (*Plantago major*), soft rush and meadow foxtail. Soils were dark in color and mottled. Hydrology was observed in May, 1993. The majority of the drainage has been excavated to create a well-defined channel and the limits in these areas are the top of the bank. The natural flow of this drainage has been altered: the area drains to the west from tax lot 20 1 and from tax lot 400 it drains to the southeast. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

**Additional information from the *Inventory and Channel Report for Springfield Waterways*
August 2004****Irving Slough*****Riparian Profile Details***

- Plant community of mostly hardwoods, then dominated by invasive species and grass/field.
- Dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry) and *Solanum dulcamara* (Nightshade).
- Co-dominant invasive plant species: *Phalaris arundinacea* (Reed Canary-grass), *Rubus armeniacus* (Armenian Blackberry), *Solanum dulcamara* (Nightshade), and *Hedera helix* (English Ivy).
- Invasive plant species listed as present: *Holcus lanatus* (Velvet Grass), *Dipsacus fullonum* (Teasel), *Solanum dulcamara* (Nightshade), *Hedera helix* (English Ivy), and *Phalaris arundinacea* (Reed Canary-grass).
- Others invasive plant species observed in the system: *Mentha pulegium* (Penny Royal), *Phalaris aquatica* (Harding grass), *Convolvulus sp.* (Morning Glory/Bindweed), and *Buddleia davidii* (Butterfly Bush).
- Nutria and bullfrogs were recorded as invasive animals/amphibian.
- Tunneling, undercutting of banks and stripping of vegetation were recorded as damage by invasive animals/amphibian.
- Minnows, carp, ducks, geese, Blue Heron and Bluegill were recorded as other wildlife observed.
- Deer scat was recoded for wildlife evidence.
- No plant species were identified for seed collection.
- Riparian buffer enhancement, neighborhood education and bank stabilization were recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were

derived by adding the health ratings for all reaches together then dividing by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	3.4
Water Appearance	7.6
Nutrient Enrichment	7.5
Bank Stability	6.0
Canopy Density/Cover	4.0
Invasive Damage – P	2.9
Invasive Damage – A/A	8.8
Waste Presence	9.2
Barriers to Fish (SBW)	7.4
Insect/Invert Habitat (SBW)	5.6
In-stream Fish Cover (SBW)	3.5
Average Overall Health Rating	5.9 = Poor

Wetland and Impact Area Summary

Wetland Acreage	12.53
Impact Area Acreage	51.49
Combined Wetland and Impact Area	64.02
Vacant Acres within the Combined Area	17.08
Number of Parcels Affected	197
Combined Parcel Acreage	99.11

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	HI	LMI	CI	PLO	TOTAL ACRES
M-16A	1.33	0	0	0	0	1.33
M-16A Impact Area	10.27	0	0	0	0	10.27
M-16B	5.51	0	0	0	0	5.51
M-16B Impact Area	12.26	0	0	0	.02	12.28
M-16C	2.26	2.88	.55	0	0	5.69
M-16C Impact Area	12.94	12.09	3.37	.49	.05	28.94
Total	44.57	14.97	3.92	0.49	0.07	64.02

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	HI	LMI	CI	PLO	TOTAL ACRES
M-16A	.18	0	0	0	0	.18
M-16A Impact Area	1.23		0	0	0	1.23
M-16B	.21	0	0	0	0	.21
M-16B Impact Area	1.62	0	0	0	0	1.62
M-16C	1.26	2.33	0	0	0	3.59
M-16C Impact Area	6.27	3.98	0	0	0	10.25
Total	10.77	6.31	0	0	0	17.08

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for M-16(a-c)

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

M-16a is a high quality wetland whose water quality and hydrologic control functions are intact. M-16b and M-16c are rated as moderate quality wetlands. The water quality function for M-16a and M-16b has been impacted, but their hydrologic control function is still intact. Each of the wetland segments provide habitat for some wildlife species. Fully allowing conflicting uses would mean the loss of the habitat, water quality and hydrologic control functions.

Social Consequences

M-16a, b, and c, were judged not to be appropriate for educational or recreational purposes by the OFWAM analysis. The wetlands are not generally considered aesthetically pleasing. M-16a and M-16b provide an amenity for many established residences the wetland. Fully allowing conflicting uses would mean the loss of a community water feature that has high potential for restoration.

Economic Consequences

Fully allowing conflicting uses would mean the loss of 17.08 acres of vacant residential and industrial land within the combined resource and impact area. The hydrologic and water quality functions could be duplicated using engineered facilities, but at a high cost. Limiting conflicting uses could allow continued natural function while retaining the opportunity to develop additional residential neighborhoods within the existing urban growth boundary.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie in the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	HI	LMI	CI	PLO	TOTAL ACRES
M-16A	.18	0	0	0	0	.18
M-16A 25-ft Setback	.16	0	0	0	0	.16
M-16B	.21	0	0	0	0	.21
M-16B 25-ft Setback	.11	0	0	0	0	.11
M-16C	2.26	2.88	.55	0	0	5.69
M-16C 25-ft. Setback	1.97	2.01	.60	0	0	4.58
Total	4.89	4.89	1.15	0	0	10.93

About 6.08 acres of M-16A is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 28 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect 4.85 acres of vacant residential and industrial land. The affect of the setback on buildable land could be reduced by aligning development such that back yards, landscaping and other open space is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

M-16 (a-c) was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about 4.85 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site: M20 Maple Island Slough	Acres: 0.35	OFWAM: Provides diverse wildlife habitat; Hydrologic control function is intact. High Quality Wetlands	Springfield Waterways Channel Assessment: Not Assessed
	Type: RLP		Inventoried Riparian Resource? Yes: S17 WHA Score: 67 High Quality Resource

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. M20 is associated with Maple Island Slough. The Slough is tributary to a water quality limited watercourse and is protected by a 50-foot setback and a site plan review requirement. No additional setbacks are necessary.



Description:

Wetland M20 is 0.52 acres (.35 is within Springfield UGB) and classified as RLP. The wetland is located adjacent to Maple Island Slough, a tributary of the McKenzie River, on the northwest end of Springfield's UGB. The surrounding land was planted with mint (*Mentha* sp.) fields and filbert orchards. Direct hydrology was observed in the canal where on-site evaluation was

conducted. Soils were dark in color with mottles. Willow and Himalayan blackberries lined the banks of the creek with reed canarygrass and velvet-grass dominating the bottom of the canal. Wetland limits are contained within the well-defined banks. Water has been impounded by roads. Where off-site determination was necessary on the western portion, wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.

Wetland and Impact Area Summary

Wetland Acreage	.35
Impact Area Acreage	4.52
Combined Wetland and Impact Area	4.87
Vacant Acres within the Combined Area	4.25
Number of Parcels Affected	5
Combined Parcel Acreage	27.1

Conflicting Uses by Acre and Zoning District

SITE ID	CI	TOTAL ACRES
M-20	.35	.35
M-20 Impact Area	4.52	4.52
Total	4.87	4.87

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	CI	TOTAL ACRES
M-20	.35	.35
M-20 Impact Area	4.25	4.25
Total	4.6	4.6

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

M20 is associated with Maple Island Slough. The Slough is tributary to a water quality limited watercourse and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for M-20

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

M-20 is rated as a high quality wetland. It is part of the Maple Island Slough, a highly rated riparian resource site in Springfield. The wetland provides diverse wildlife habitat and the water quality control function of the site is intact. Fully allowing conflicting uses would mean the loss of these functions.

Social Consequences

The wetland was judged not to be appropriate for recreational or educational use by the OFWAM analysis. The wetland is considered to be aesthetically pleasing.

Economic Consequences

Fully protecting M-20 would mean the loss of 4.6 acres of vacant industrial land within the combined wetland and impact area boundaries.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. M20 is associated with Maple Island Slough. The Slough is tributary to a water quality limited watercourse and is protected by a 50-foot setback and a site plan review requirement. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	CI	TOTAL ACRES
M-20	.35	.35
M-20 50-ft. Setback	1.28	1.28
Total	1.63	1.63

About .35 acres of M-20 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 2 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under Article. No additional setback is proposed.

A 50-foot setback would affect 1.28 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

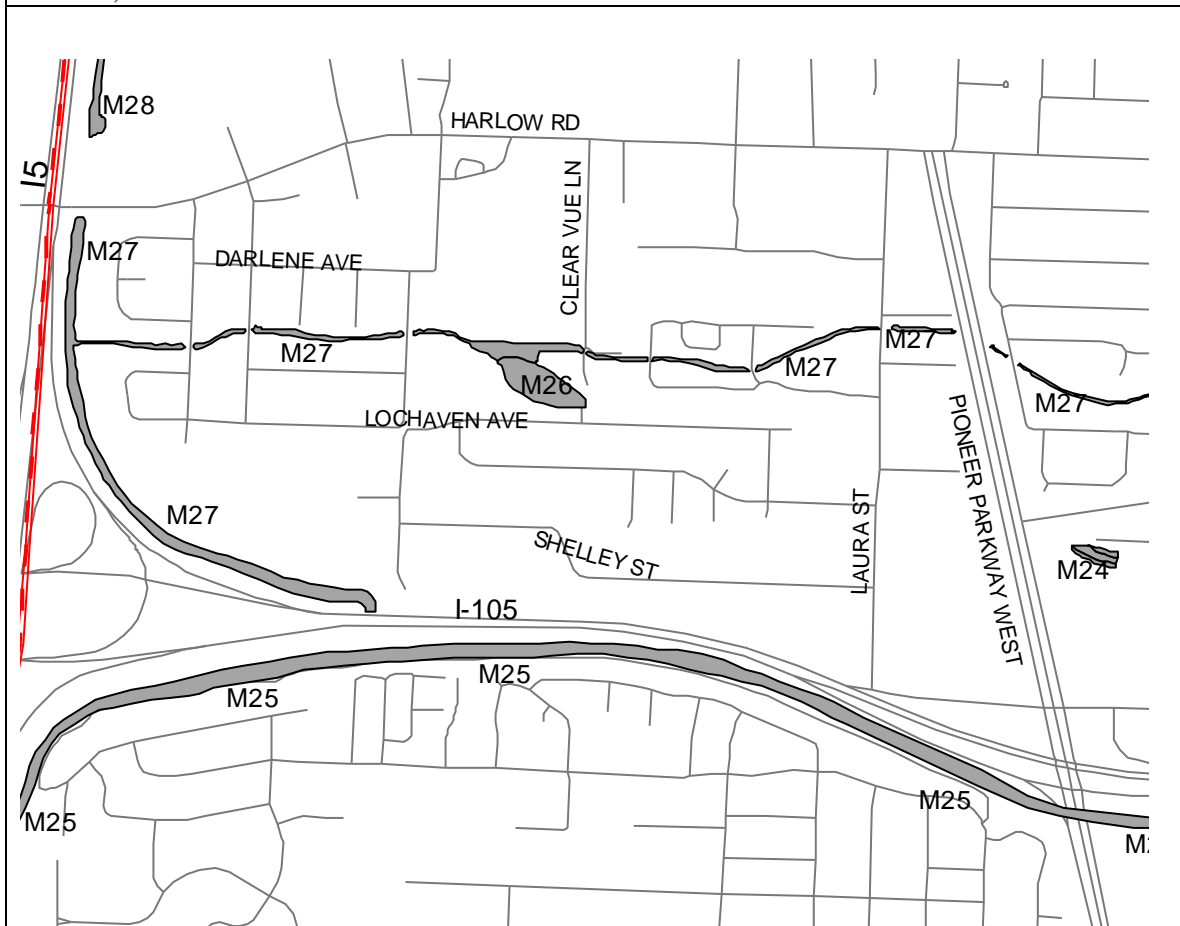
Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

M-20 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 1.28 acre impact of the setback is not attributed to this report.

Site: M26 Guy Lee	Acres: 1.82	OFWAM: Provides diverse wildlife habitat; Wetland provides educational and recreational opportunities and is aesthetically pleasing. High Quality Wetlands	Springfield Waterways Channel Assessment: Not Assessed
	Type: PFO, PEM, PSS		Inventoried Riparian Resource? Yes: S14 WHA Score: 35 Moderate Quality Resource

Goal 5 Recommendation: Limit conflicting uses that may impact the wetland. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.



Description:

Wetland M26 is 1.82 acres and classified as PFO/PEM/PSS. The wetland is located mostly in a park, adjacent to Guy Lee School. The site is also listed as S14 on the Springfield Inventory of Natural Resource Sites. Hydrology was directly observed in May, 1993. Soils were dark in color.

Dominant overstory species was Oregon ash. Understory dominant species include Douglas spirea, Indian plum (*Oemleria cerasiformis*) and rose (*Rosa* sp.). Herbaceous dominants include reed canarygrass, soft rush, Dewey's sedge (*Carex deweyana*), cleavers (*Galium aparine*), common horsetail and Canada thistle. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Wetland and Impact Area Summary

Wetland Acreage	1.82
Impact Area Acreage	5.16
Combined Wetland and Impact Area	6.98
Vacant Acres within the Combined Area	4.49
Number of Parcels Affected	30
Combined Parcel Acreage	16.63

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
M-26	.97	.85	1.82
M-26 Impact Area	3.05	2.11	5.16
Total	4.02	2.96	6.98

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
M-26	.77	.85	1.62
M-26 Impact Area	1.2	1.67	2.87
Total	1.97	2.52	4.49

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for M-26

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

While M-26 is a moderate quality wetlands and resource site, it provides diverse wildlife habitat. Fully allowing conflicting uses would mean the loss of this habitat function. Limiting conflicting uses could preserve the habitat while allowing continued public use and access.

Social Consequences

The location of the site near the school provides both recreational and educational opportunities. The site is shown on the Willamalane Parks and Recreation District Comprehensive Plan as a proposed School/Park project. The site is aesthetically pleasing. Fully allowing conflicting uses would mean the loss of these resource values.

Economic Consequences

Fully protecting S-14 would affect 4.49 acres of combined resource and impact area acreage that is zoned for residential and public use. About 2.52 acres of the vacant land is in public ownership by School District 19. About 1.97 acres of privately owned vacant residential acreage falls within the combined resource and impact area acreage.

Limiting conflicting uses could preserve the public uses of the site while allowing private development to occur.

Energy Consequences

None of note.

Recommended Program for Protection

The educational and aesthetic value of the site warrants some protection. The site has enhancement and restoration potential. The channel could be widened to allow a wetland marsh to develop. Human intrusion into the ash grove should be managed to limit the damage that foot traffic and litter has caused to plant and animal life. Construction of a boardwalk and educational and interpretive signs could help address these problems.

Limit conflicting uses that may impact the wetland. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
M-26	.77	.85	1.62
M-26 25-ft. Setback	.21	.31	.52
Total	.98	1.16	2.14

About 1.62 acres of M-26 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 2 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect .21 acres of vacant residential land. The affect of the setback on buildable land could be reduced by aligning development such that back yards and other open space that is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

M-26 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about .21 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site: M28 Gateway Channel	Acres: 1.50	OFWAM: Special Interest for Protection (mitigation site) Moderate Quality Wetlands	Springfield Waterways Channel Assessment: I-5 Gateway Channel 5.1 (Poor)
	Type: PEM		Inventoried Riparian Resource? No

Goal 5 Recommendation: Fully protect the site from conflicting uses. Maintain an average 25-foot development setback from the wetland.



Description:

Wetland M28 is 1.50 acres and classified as PEM. The wetland is the Corps of Engineers' wetland mitigation project for the Gateway Mall. Ponding was present in the ditch from commercial and highway runoff. No overstory or understory was present. Herbaceous dominants were Canada thistle, reed canarygrass, common cattail and velvet-grass. Wetland/upland boundary delineations were made by topographic and vegetation characteristics.

The impact area adjacent to the wetland site has been completely developed. On west side of the wetland is I-5. On the east side is the Gateway Mall.

Additional information from the *Inventory and Channel Assessment for Springfield Waterways*

I-5 Gateway Channel

Riparian Profile Details

- Plant community is mostly mixed with one hardwood, one grass/field and one dominated by invasive species.
- Dominant invasive plant species: *Phalaris arundinacea* (Reed Canary-grass) and *Rubus armeniacus* (Armenian Blackberry).
- Co-dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry), *Phalaris arundinacea* (Reed Canary-grass), and *Holcus lanatus* (Velvet Grass).
- Invasive plant species listed as present: *Holcus lanatus* (Velvet Grass), *Rubus armeniacus* (Armenian Blackberry), *Phalaris arundinacea* (Reed Canary-grass), *Solanum dulcamara* (Nightshade), *Dipsacus fullonum* (Teasel), and *Mentha pulegium* (Penny Royal).
- Others invasive plant species observed in the system: *Cytisus scoparius* (Scotch Broom), *Phalaris aquatica* (Harding grass), and *Iris pseudacorus* (Yellow flag Iris).
- Nutria was recorded as invasive animals/amphibian observed.
- Tunneling, eating and stripping of vegetation, and undercutting of banks are the types of damage by invasive animals/amphibian recorded.
- Wildlife observed was nutria, Great Blue Herons, Mallards, Killdeer, and a Green Heron.
- Nutria scat, animal paths and animal tracks were recorded as wildlife evidence observed.
- *Myosotis laxa* (Small-flowered forget-me-not), and *Sparganium emersum* (Simple-stem bur-reed) were recorded for seed collection.
- Riparian buffer enhancement was recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding the health ratings for all reaches together then dividing by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	1.7
Water Appearance	2.3
Nutrient Enrichment	2.0
Bank Stability	8.0

Canopy Density/Cover	2.9
Invasive Damage – P	5.0
Invasive Damage – A/A	7.6
Waste Presence	7.9
Barriers to Fish (SBW)	0 N/A
Insect/Invert Habitat (SBW)	0 N/A
In-stream Fish Cover (SBW)	0 N/A
Average Overall Health Rating	5.1= Poor

Wetland and Impact Area Summary

Wetland Acreage	1.50
Impact Area Acreage	8.52
Combined Wetland and Impact Area	10.02
Vacant Acres within the Combined Area	.87
Number of Parcels Affected	7
Combined Parcel Acreage	60.34

Conflicting Uses by Acre and Zoning District

SITE ID	CC	TOTAL ACRES
M-28*	1.50	1.50
M-28 Impact Area	8.52	8.52
Total	10.02	10.02

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	CC	TOTAL ACRES
M-28*	.04	.04
M-28 Impact Area	.83	.83
Total	.87	.87

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for M-28

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

M-28 is provides wildlife habitat for some species. The wetland’s water-quality and hydrologic control functions have been impacted. The site qualifies as a “wetland of special interest for protection” as a mitigation site. Fully allowing conflicting uses would mean the loss of the mitigation use that was intended by the US Army Corps of Engineers when the wetland was created.

Social Consequences

M-28 was not judged to be appropriate for educational or recreational uses by the OFWAM analysis. The site is not aesthetically pleasing.

Economic Consequences

M-28 was created as a mitigation site for the wetlands that were filled for the construction of the Gateway Mall. Fully allowing conflicting uses would require the replacement of the site at significant expense.

Energy Consequences

None of note.

Recommended Program for Protection

Fully protect the site from conflicting uses. Maintain an average 25-foot development setback from the wetland.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	CC	TOTAL ACRES
M-28	1.50	1.50
M-28 25-ft. Setback	1.47	1.47
Total	2.97	2.97

About 1.50 acres of M-28 is classified as vacant by the Lane County Assessor’s Office. The vacant acreage includes portions of 5 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect 1.47 acres of vacant commercial land. The affect of the setback on buildable land could be reduced by aligning development such that back yards and other open space is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

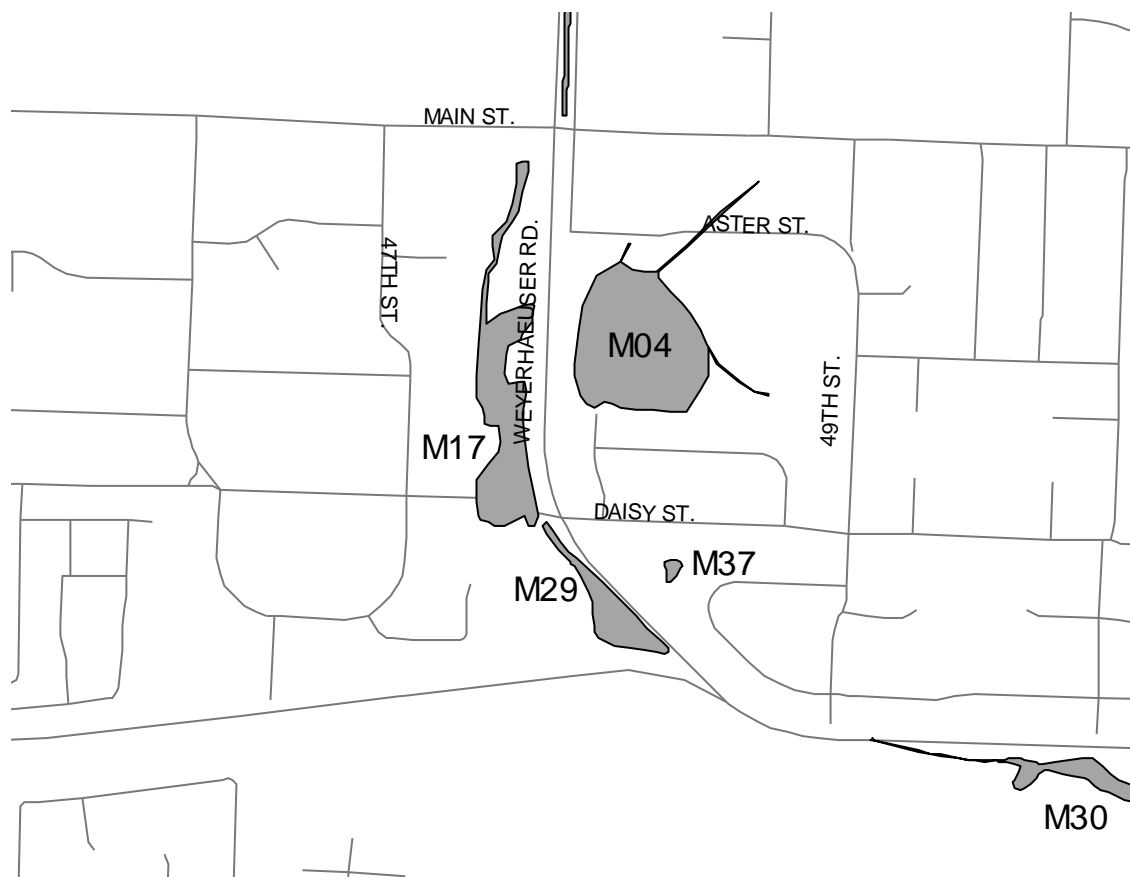
Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

M-28 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about 1.47 acres; however this area can be incorporated into the overall development without a significant loss of buildable area.

Site: M29 Daisy St. and Haul Rd.	Acres: 1.08	OFWAM: Special Interest for Protection: wetland is inhabited by a federally listed species. High Quality Wetlands	Springfield Waterways Channel Assessment: Not Assessed
	Type: PFO, PEM		Inventoried Riparian Resource? No

Goal 5 Recommendation: Fully protect the wetland from conflicting uses. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie within the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.



Description:

Wetland M29 is 1.08 acres and classified as PFO/PEM. The wetland is located north of Booth Kelly Road. Run-off is impounded onto the site by Booth Kelly Road. Hydrology was directly observed and soils were dark in color. The overstory consisted of willows and Oregon ash and the understory was dominated by Himalayan blackberry. The ground was covered with red fescue. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Wetland and Impact Area Summary

Wetland Acreage	1.08
Impact Area Acreage	6.29
Combined Wetland and Impact Area	7.37
Vacant Acres within the Combined Area	3.41
Number of Parcels Affected	15
Combined Parcel Acreage	242

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	MDR	HI	PLO	TOTAL ACRES
M-29*	.64	0	.44	0	1.08
M-29 Impact Area	3.71	.45	1.72	.41	6.29
Total	4.35	.45	2.16	.41	7.37

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	MDR	HI	PLO	TOTAL ACRES
M-29*	.64	0	0	0	0
M-29 Impact Area	2.77	0	0	0	0
Total	3.41	0	0	0	3.41

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for M-29

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

The wetland provides habitat for some wildlife species. The water-quality and hydrologic control functions have been impacted. The site is inhabited by a species that is listed by state and federal agencies as endangered.

Social Consequences

The wetland as judged not to be appropriate for educational or recreational uses by the OFWAM analysis. The site is not aesthetically pleasing.

Economic Consequences

Fully protecting the site would mean the loss of 3.41 acres of vacant residential land within the combined wetland and impact area boundaries.

Energy Consequences

None of note.

Recommended Program for Protection

Fully protect the wetland from conflicting uses. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie on the site requires coordination with the appropriate agencies to determine what (if any) additional measures may be needed.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	TOTAL ACRES
M-29	.64	.64
M-29 25-ft. Setback	.44	.44
Total	1.08	1.08

About .64 acres of M-29 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes a portion of 1 lot. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect .44 acres of vacant residential land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

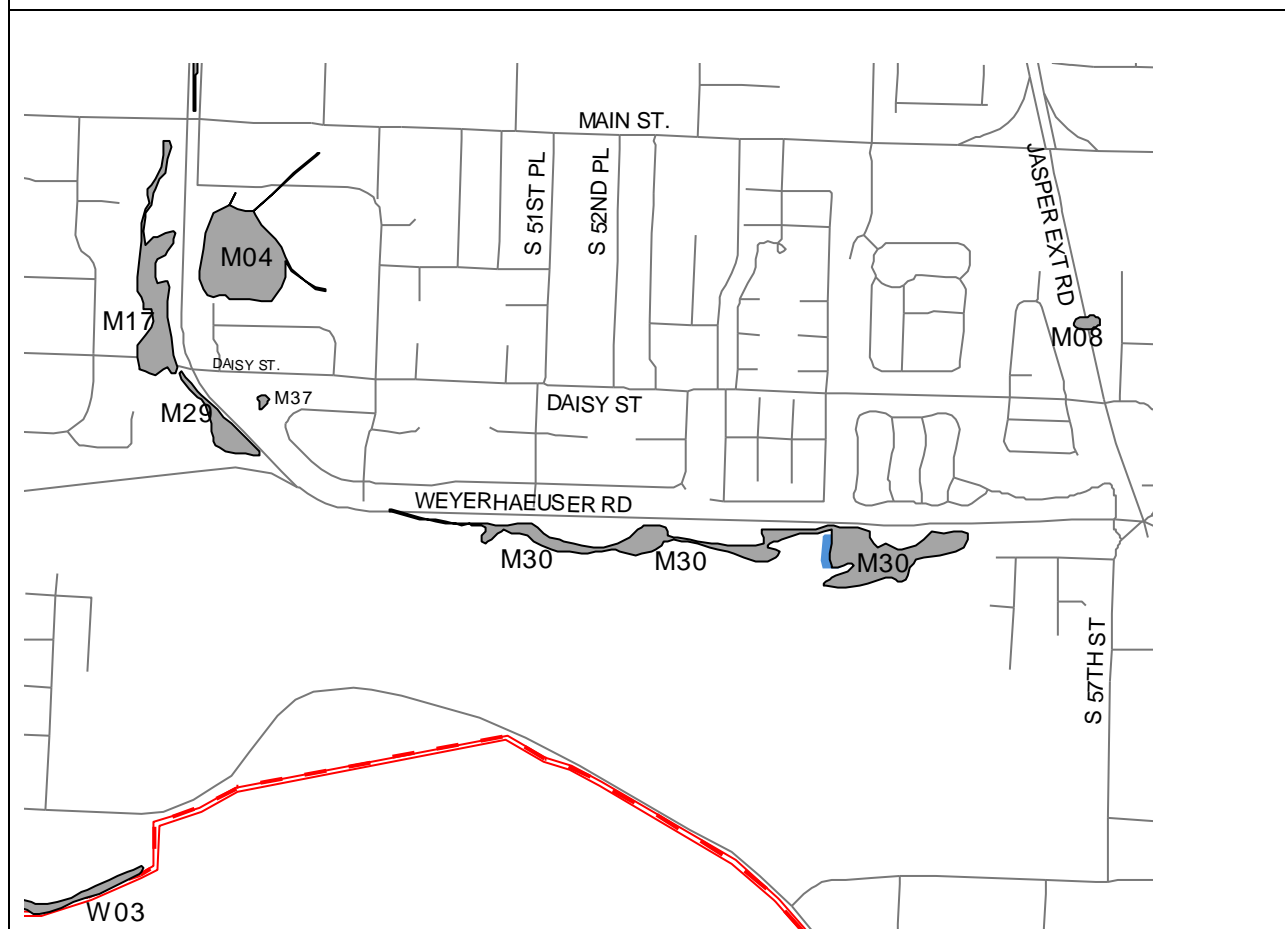
Reduction in the Buildable Land Inventory:

M-29 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about .44 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site: M30 48th Street / Haul Rd.	Acres: 6.48	OFWAM: Water Quality Function is intact	Springfield Waterways Channel Assessment: 48th St. Haul Rd. 4.6 (Poor)
	Type: PFO, PEM, POW	Moderate Quality Wetland	Inventoried Riparian Resource? No

Goal 5 Recommendation: Limit conflicting uses that may impact the resource. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The proximity of this site to the documented presence of a federally listed specie at M-29 and M-04 warrants a survey for the specie at this location.

M30 is part of the 48th Street Channel. The channel is a tributary to a water quality limited watercourse and is protected by a 50-foot setback and a site plan review requirement. No additional setback is necessary.



Description:

Wetland M30 is mapped at 6.49 acres in size and is classified as PFO/PEM/POW. The wetland is located west of Potato Hill, running along the south side of the Weyerhaeuser Haul Rd., roughly between 48th and 58th Streets. The wetland is predominantly forested on the east side and a pasture containing a ditch and farm pond is on the west side. Hydrology was directly observed in the farm pond and in the forested area by a spring on the hillside. Water coming out of the spring flows downhill into a forested wetland shelf. Soils were dark in color with mottles. Overstory dominant specie was Oregon ash. There was a sparse understory, but a thick ground cover of meadow foxtail, velvet-grass, red fescue, slough sedge and stinging nettle (*Urtica dioica*). An abundance of Camas (*Camassia quamash*) was also observed by DSL and City staff. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Additional information from the Inventory and Channel Report for Springfield Waterways

48th St. Haul Rd. Pond Channel

Riparian Profile Details

- Plant community is grass/field with one hardwood reach.
- No dominant invasive plant species was listed.
- No co-dominant invasive plant species was recorded.
- Invasive plant species listed as present: *Mentha pulegium* (Penny Royal), *Rubus armeniacus* (Armenian Blackberry), *Holcus lanatus* (Velvet Grass), and *Rubus laciniatus* (Evergreen Blackberry).
- Others invasive plant species observed in the system: *Parentucellia viscosa* (Parentucellia) and *Phalaris aquatica* (Harding grass).
- Bullfrogs were observed as the invasive animals/amphibian.
- No damage by invasive animals/amphibian was recorded.
- Wildlife observed was a Green Heron and a Great Blue Heron.
- No wildlife evidence recorded.
- No plant species were identified for seed collection.
- Riparian buffer enhancement was recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding each health rating for each reach together then dividing it by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	1.3
Water Appearance	0 dry

Nutrient Enrichment	0 dry
Bank Stability	2.8
Canopy Density/Cover	2.8
Invasive Damage – P	8.0
Invasive Damage – A/A	9.7
Waste Presence	1.0
Barriers to Fish (SBW)	9.5
Insect/Invert Habitat (SBW)	6.0
In-stream Fish Cover (SBW)	2.0
Average Overall Health Rating	4.6 = Poor

Wetland and Impact Area Summary

Wetland Acreage	6.48
Impact Area Acreage	28.21
Combined Wetland and Impact Area	34.69
Vacant Acres within the Combined Area	30.59
Number of Parcels Affected	39
Combined Parcel Acreage	153.05

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
M30	6.37	.11	6.48
M30 Impact Area	27.3	.91	28.21
Total	33.67	1.02	34.69

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
M30	6.37	.11	6.48
M30 Impact Area	23.20	.91	24.11
Total	29.57	1.02	30.59

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

M30 is associated with the 48th Street Channel. The channel is a tributary to a water quality limited watercourse and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for M-30

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

The wetland provides habitat for some wildlife species. The water quality function of the wetland is intact, but the hydrologic control function has been impacted. Nearby wetland sites (M29 and M-04) are documented as hosting state and federally listed plant species.

Fully allowing conflicting uses would mean the loss of the wildlife habitat and water quality functions of the site, and possibly habitat for listed plant species.

Social Consequences

The site is aesthetically pleasing. It was judged not to be appropriate for educational or recreational uses by the OFWAM analysis, although the Weyerhaeuser Haul Rd. (a gated private road) is often used by citizens in the neighborhood as a walking/biking path. The Willamalane Parks and Recreation District Comprehensive Plan and the Springfield Bike Plan show the Weyerhaeuser Haul Rd. as a planned bike route. Fully allowing conflicting uses would mean the loss of this site as a natural amenity near the road.

Economic Consequences

Fully protecting the resource would mean the loss of 30.59 acres of vacant residential and public land within the combined wetland and impact area boundaries. Limiting conflicting uses could allow development to occur while preserving the natural functions of the site if that development employed low impact development design standards.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the resource. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The proximity of this site to the documented presence of a federally listed specie at M-29 and M-04 warrants a survey for the specie at this location.

M30 is part of the 48th Street Channel. The channel is a tributary to a water quality limited watercourse and is protected by a 50-foot setback and a site plan review requirement. No additional setback is necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
M-30	6.37	.11	6.48
M-30 50-ft. Setback	4.51	.12	4.63
Total	10.88	.23	11.11

About 6.48 acres of M-30 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 39 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under Article. No additional setback is proposed.

A 50-foot setback would affect 4.51 acres of vacant residential land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

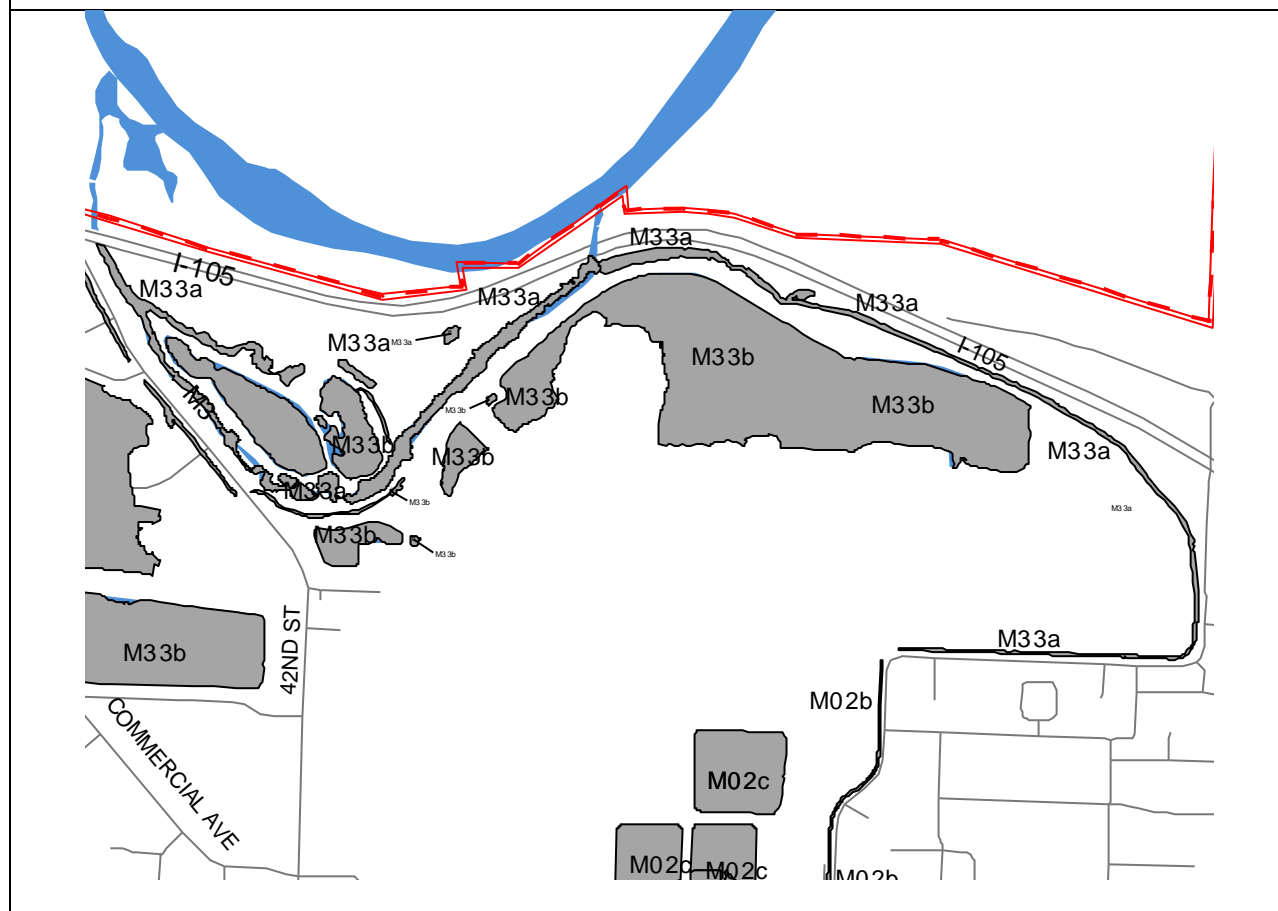
Reduction in the Buildable Land Inventory:

M-30 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 11.11 acre impact of the setback is not attributed to this report.

Site: M33a 48th St. and WeyCo Channel	Acres: 12.07	OFWAM: Provides diverse wildlife habitat; Hydrologic control function is intact. High Quality Wetlands	Springfield Waterways Channel Assessment: 48th St. Channel 6.0 (Poor)
	Type: POW, PSS, RLP		Inventoried Riparian Resource? Yes: S09 WHA Score: 50 High Quality Resource

Goal 5 Recommendation: Limit conflicting uses that may impact the resource. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed species within the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.

M33a is part of the 48th Street Channel. The channel is a tributary to a water quality limited watercourse (McKenzie River) and is already protected by a 50-foot setback and a site plan review requirement. No additional setbacks are necessary.



Description:

Wetland M33 is 139.83 acres and is classified as POW/PSS/RLP. The wetland is located south of Highway 126 and north of the Weyerhaeuser warehouse. This is a composite wetland that includes the Weyerhaeuser log ponds. These are well-incised ponds that are vegetated with blackberries and horsetail along the banks. The ponds are not considered wetlands, but are “other waters”. They are connected to the McKenzie River via a slough. Only the slough, M33a, qualifies as wetland. The slough is 12.07 acres. Wetland boundary determinations were made at the top-of-bank.

Additional information from the *Inventory and Channel Report for Springfield Waterways***48th Street Channel*****Riparian Profile Details***

- Plant community differs throughout the system ranging between grass/field, hardwoods, mixed, and dominated by invasive species.
- Dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry), *Phalaris arundinacea* (Reed Canary-grass), and *Holcus lanatus* (Velvet Grass).
- Co-dominant invasive plant species: *Dipsacus fullonum* (Teasel), *Phalaris arundinacea* (Reed Canary-grass), *Solanum dulcamara* (Nightshade), and *Rubus armeniacus* (Armenian Blackberry).
- Invasive plant species listed as present: *Rubus armeniacus* (Armenian Blackberry), *Dipsacus fullonum* (Teasel), *Solanum dulcamara* (Nightshade), *Phalaris arundinacea* (Reed Canary-grass), and *Holcus lanatus* (Velvet Grass).
- Others invasive plant species observed in the system: *Cytisus scoparius* (Scotch Broom) and *Mentha pulegium* (Penny royal).
- No invasive animals/amphibian was recorded.
- No damage by invasive animals/amphibian was recorded.
- Wildlife observed was Green Heron, Lesser Gold Finch, minnows, and frogs.
- No wildlife evidence recorded.
- No plant species were identified for seed collection.
- Riparian buffer enhancement and neighborhood education were recorded the most for project opportunities. One reach listed bank stabilization as a project opportunity.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding each health rating for each reach together then dividing it by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	1.1
Water Appearance	8.7
Nutrient Enrichment	6.8

Bank Stability	7.0
Canopy Density/Cover	3.6
Invasive Damage – P	3.6
Invasive Damage – A/A	10.0
Waste Presence	9.4
Barriers to Fish (SBW)	9.2
Insect/Invert Habitat (SBW)	4.9
In-stream Fish Cover (SBW)	3.2
Average Overall Health Rating	6.0 = Poor

Wetland and Impact Area Summary

Wetland Acreage	12.07
Impact Area Acreage	72.07
Combined Wetland and Impact Area	84.14
Vacant Acres within the Combined Area	53.41
Number of Parcels Affected	54
Combined Parcel Acreage	496.24

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	HI	LM	TOTAL ACRES
M33a	0	12.07	0	12.07
M33a Impact Area	3.4	68.5	.17	72.07
Total	3.4	80.57	.17	84.14

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LRD	HI	LM	TOTAL ACRES
M33a	0	9.29	0	9.29
M33a Impact Area	0	43.95	.17	44.12
Total	0	53.24	.17	53.41

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

M33a is part of the 48th Street Channel. The channel is a tributary to a water quality limited watercourse (McKenzie River) and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for M-33a

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

M-33a provides habitat for some wildlife species. The wetland's hydrologic control function is intact, but the water quality function has been degraded. The northern portion of the wetland is documented as habitat for a state and federally listed specie. Fully allowing conflicting uses would mean the loss of the habitat and hydrologic control functions of the site.

Social Consequences

The wetland was judged not to be appropriate for educational or recreational uses by the OFWAM analysis. The wetland is not aesthetically pleasing. The wetland is flows through land that is zoned for heavy industrial uses and is almost completely within one ownership, Weyerhaeuser. Fully allowing conflicting uses would have limited social consequences.

Economic Consequences

Fully protecting M-33a would mean the loss of 53.41 acres of vacant industrial land within the combined wetland and impact area boundaries. Limiting conflicting uses by requiring development to incorporate low impact development design elements could retain the much of the habitat function of the site while preserving the utility of the land for zoned purposes.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the resource. M33a is part of the 48th Street Channel. The channel is a tributary to a water quality limited watercourse (McKenzie River) and is protected by a 50-foot setback and a site plan review requirement. No additional setbacks are necessary.

Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie within the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	HI	TOTAL ACRES
M-33A	9.28	9.28
M-33A 50-ft. Setback	17.46	17.46
Total	26.74	26.74

About .9.28 acres of M-33A is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 3 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under Article. No additional setback is proposed.

A 50-foot setback would affect 17.46 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

M-33A was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 17.46 acre impact of the setback is not attributed to this report.

Site: W02 Daisy St. and 42nd	Acres: 0.89	OFWAM: Special Interest for Protection: wetland is inhabited by species listed federally as threatened or endangered or state listed as sensitive, threatened or endangered. High Quality Wetlands	Springfield Waterways Channel Assessment: Not Assessed
	Type: PEM		Inventoried Riparian Resource? No

Goal 5 Recommendation: Fully protect the wetland from conflicting uses. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie within the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.



Description:

Wetland W-02 is 0.89 acres and classified as PEM. The site contains a ephemeral wet area that has been partially filled. The surrounding properties have been fully developed as single family residences. The wetland has been demarked with a split rail fence. No understory or overstory

was present. Herbaceous dominant species include cattails, field mint and meadow foxtail. Soils were dark in color and mottled. Hydrology was directly observed. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.

Wetland and Impact Area Summary

Wetland Acreage	.89
Impact Area Acreage	3.33
Combined Wetland and Impact Area	4.22
Vacant Acres within the Combined Area	0
Number of Parcels Affected	34
Combined Parcel Acreage	6.11

Conflicting Uses by Acre

SITE ID	LD	MD	TOTAL ACRES
W-02*	.89	0	.89
W-02 Impact Area	2.47	.86	3.33
Total	3.36	.86	4.22

Conflicting Uses by Vacant Acre

SITE ID	LD	MD	TOTAL ACRES
W-02*	0	0	0
W-02 Impact Area	0	0	0
Total	0	0	0

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for W-02

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

The wetland provides habitat for some wildlife species. The wetland's water quality and hydrologic control functions have been impacted. The wetland is documented to be inhabited by a state and federally listed specie. Fully allowing conflicting uses would mean the loss of the habitat function and would threaten the listed specie on the site.

Social Consequences

The wetland is located within a residential neighborhood. It was judged not to be appropriate for educational or recreational purposes by the OFWAM analysis. The wetland is not aesthetically pleasing, but has moderate potential for enhancement. Fully allowing conflicting uses would mean the loss of a potential natural amenity in the neighborhood. Limiting conflicting uses could allow for development to occur while protecting habitat for the listed species.

Economic Consequences

The Lane County Assessor's Property Class Codes show that the wetland and its impact area are fully developed. This does not preclude future partitioning of property for more intense development. The potential for redevelopment or for additional land divisions leading to more new development should include measures to fully protect the listed specie on the site.

Fully protecting the site will mean the loss of potentially developable residential land within the combined wetland and impact area boundaries. Allowing additional conflicting uses may destroy habitat for the listed specie.

Energy Consequences

None of note.

Recommended Program for Protection

Fully protect the wetland from conflicting uses. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie within the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage

SITE ID	LDR	MDR	TOTAL ACRES
W-02	.89	0	.89
W-02 25-ft. Setback	(Developed) .73	(Developed) .13	(Developed) .86
Total	1.62	.13	1.75

W-02 is .89 acres in size and is classified "010" which means the land is considered un-buildable by the Lane County Assessor's Office. The adjacent acreage is developed and includes portions of 12 lots. Prohibiting conflicting uses within the wetland area would preserve the resource and the habitat it provides for the listed specie. A 25-foot development setback is recommended.

A 25-foot setback would affect no vacant residential land. The setback could affect about .86 acres of adjacent developed property. That impact could be minimized by aligning future improvements to the properties such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

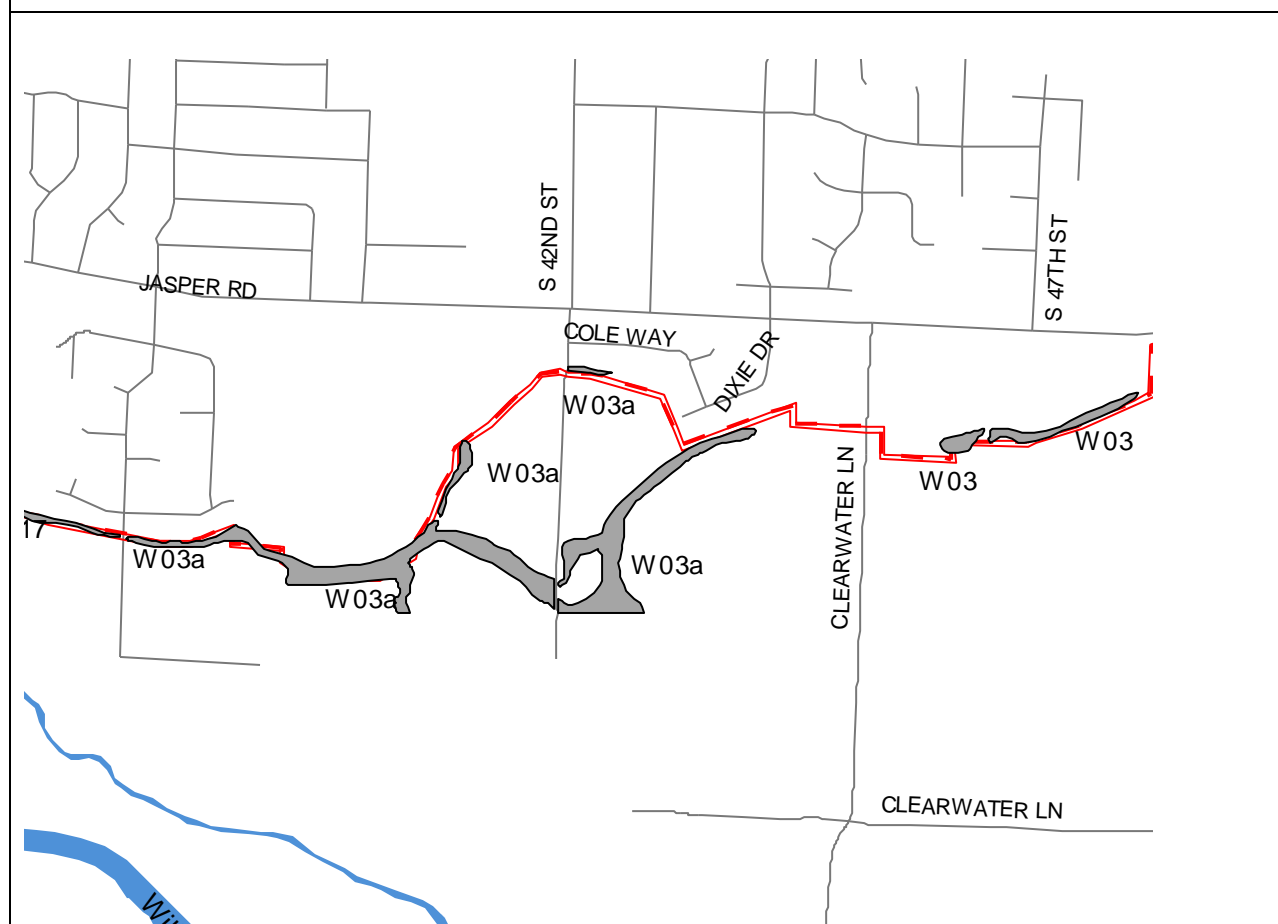
Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

W-02 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about .86 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site: W3a Jasper Slough	Acres: 16.47 1.58 within the UGB	OFWAM: Water quality function is intact. Moderate Quality Wetlands	Springfield Waterways Channel Assessment: Jasper Slough 5.8 (Poor)
	Type: PFO, PEM, POW		Inventoried Riparian Resource? Yes: S22 WHA Score: 67 High Quality Resource

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. W3a is part of the Jasper Slough which is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary. The documented presence of a state and federally listed specie requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.



Description:

Wetland W3 is 16.47 acres and classified as PFO/PEM/POW. The wetland is known as Jasper Slough. Only about 1.58 acres of the slough is located within the Springfield UGB. The remainder is in Lane County's planning jurisdiction. The overstory is dominated by Oregon ash and willow. The understory dominants include evergreen blackberry (*Rubus laciniatus*) and Douglas spirea. Herbaceous dominant species include Oregon iris (*Iris tenax*) reed canarygrass, duckweed (*Lemna minor*) and bittersweet nightshade (*Solanum dulcamara*). Soils were dark in color with mottles. Hydrology was assumed based on hydrologic indicators, soils and vegetation. Sections of the slough have been dewatered, while others are naturally perennially wet. Wetland /upland boundary delineations were made by topographic characteristics where the vegetation changed and where there were no longer indicators of hydrology.

Additional information from the *Inventory and Channel Assessment for Springfield Waterways***Jasper Slough*****Riparian Profile Details***

- Plant community of hardwoods and one reach that is dominated by invasive species.
- Dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry) and *Phalaris arundinacea* (Reed Canary-grass).
- Co-dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry), *Iris pseudacorus* (Yellow Flag Iris), *Phalaris arundinacea* (Reed Canary-grass), and *Convolvulus sp.* (Morning Glory/Bindweed).
- Invasive plant species listed as present: *Iris pseudacorus* (Yellow Flag Iris), *Phalaris arundinacea* (Reed Canary-grass), *Holcus lanatus* (Velvet Grass), *Rubus armeniacus* (Armenian Blackberry), *Solanum dulcamara* (Nightshade), *Phalaris aquatica* (Harding grass), *Convolvulus sp.* (Morning Glory/Bindweed), and *Dipsacus fullonum* (Teasel).
- Others invasive plant species observed in the system: *Buddleia davidii* (Butterfly bush), *Polygonum sp.* (Knotweed), and *Mentha pulegium* (Penny Royal).
- Nutria and beaver were recorded as invasive animals/amphibian observed.
- Tunneling causing undercutting, loss of vegetation and beaver cutting were recorded as damage by invasive animals/amphibian.
- Wood Duck, Green Heron, Belted Kingfisher, Mallards, minnows, deer and Great Blue Heron were recorded as other wildlife observed.
- Nutria scat and deer scat were recorded for wildlife evidence.
- *Myostis laxa* (Small-flowered forget-me-not) were recorded for seed collection.
- Riparian buffer enhancement, neighborhood education and one culvert retrofit/replacement were recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding the health ratings for all reaches together then dividing by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	6.6
Water Appearance	6.8
Nutrient Enrichment	4.5
Bank Stability	7.0
Canopy Density/Cover	3.3
Invasive Damage – P	2.0
Invasive Damage – A/A	8.5
Waste Presence	7.5
Barriers to Fish (SBW)	7.0
Insect/Invert Habitat (SBW)	6.4
In-stream Fish Cover (SBW)	3.9
Average Overall Health Rating	5.8 = Poor

Wetland and Impact Area Summary

Wetland Acreage	1.58
Impact Area Acreage	10.29
Combined Wetland and Impact Area	11.87
Vacant Acres within the Combined Area	1.64
Number of Parcels Affected	25
Combined Parcel Acreage	36.86

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	TOTAL ACRES
W03a	1.53	1.58
W03a Impact Area	10.29	10.29
Total	11.87	11.87

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	TOTAL ACRES
W03a	0	0
W03a Impact Area	1.64	1.64
Total	1.64	1.64

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

W03a is associated with the Jasper Slough. The Slough is tributary to a water quality limited watercourse and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for W-03a

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-03a provides habitat for some wildlife species. The site is documented as providing habitat for a state and federally listed specie. The resource's fish habitat function is degraded, as is its water quality and hydrologic control functions. Fully allowing conflicting uses would mean the loss of habitat for the listed specie that S-22 provides.

Social Consequences

The site was judged not to be appropriate for educational uses, and is not aesthetically pleasing. W-03a has high potential for enhancement. It was also judged to have potential for providing recreational opportunities, although the Willamalane Park and Recreation District Comprehensive Plan shows no proposed uses for the site.

Fully allowing conflicting uses may negate the future use of the site for recreational purposes.

Economic Consequences

Fully protecting the resource site would mean the loss of 1.64 acres of vacant residential land within the combined resource and impact area boundaries. Additional land could be lost if steps taken to protect the listed specie require additional setbacks.

Limiting conflicting uses could reduce economic impact of lost development opportunity.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. W3a is part of the Jasper Slough which is protected by a 50-foot

development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.

The documented presence of a state and federally listed specie requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed. The riparian strips along the channel are important to maintaining water quality and bank stability. Native riparian vegetation should be protected and non-native, invasive plants should be removed. Barren areas of the bank should be replanted with native plants.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	TOTAL ACRES
W-03A	0	0
W-03A 50-ft. Setback	.41	.41
Total	.41	.41

Most of W-03A is outside of the Springfield UGB. That portion that is inside the UGB is classified as developed by the Lane County Assessor's Office. Limiting conflicting uses in the future as larger lots are subdivided would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the riparian corridor could be preserved or enhanced. A 50-foot development setback is already required for the riparian area under Article. No additional setback is proposed.

A 50-foot setback would affect .41 acres of vacant residential land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

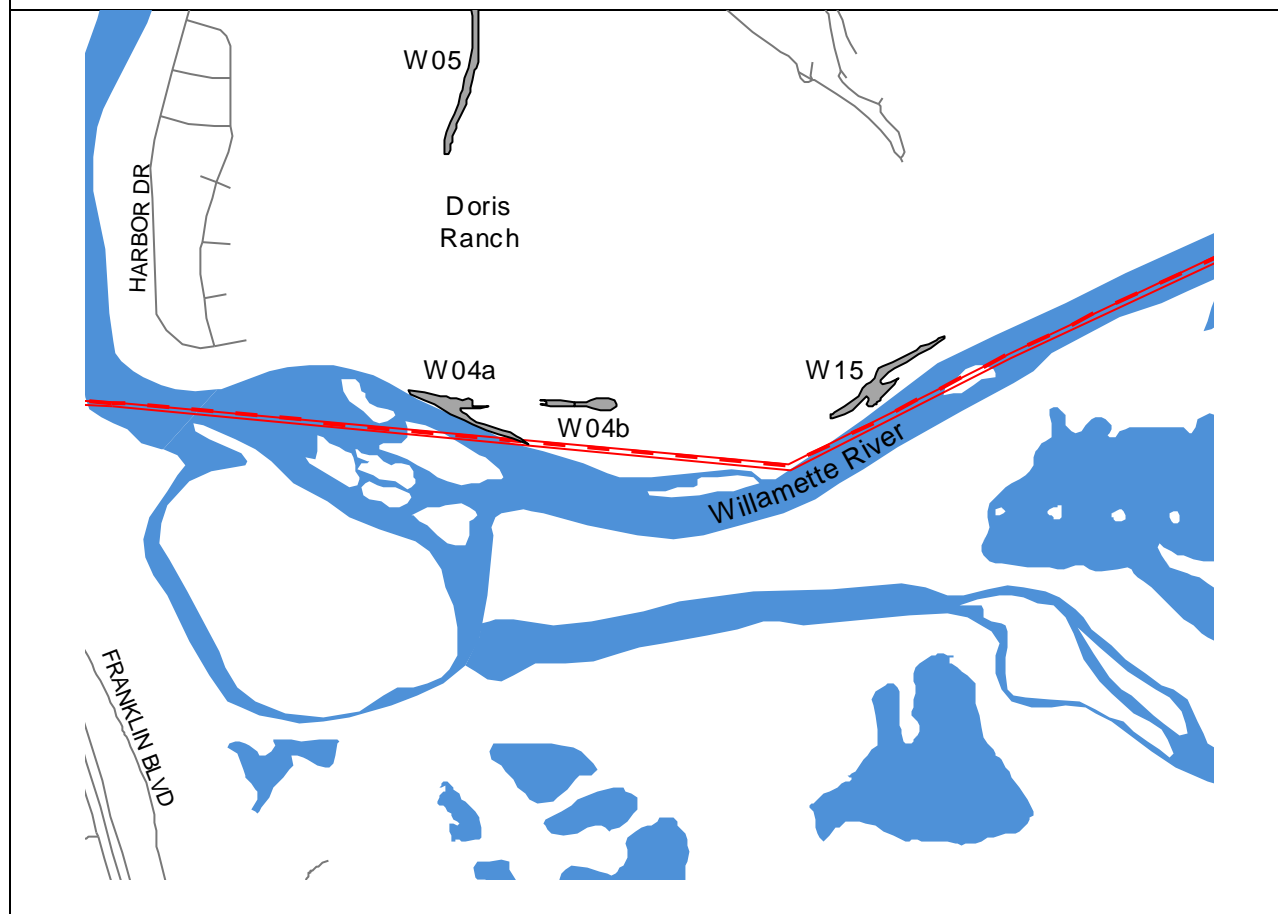
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

W-03A was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 5.15 acre impact of the setback is not attributed to this report.

Site: W04a South Dorris Ranch	Acres: 0.65	OFWAM : Water quality function is intact; Wetland is aesthetic and has potential for recreational and educational use. High Quality Wetlands	Springfield Waterways Channel Assessment: Not Assessed
	Type: PFO, PEM		Inventoried Riparian Resource? Yes: WA/WB WHA Score: 72-74 High Quality Resource

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing recreational access. W-04a associated with the Willamette River which is protected by a 75-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary. The documented presence of a state and federally listed specie requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.



Description:

Wetland W-04a is 0.97 acre and classified as PFO/PEM. About .65 acres of the wetland are within the Springfield UGB. The site is adjacent to the Middle Fork Willamette River in the southern end of Dorris Ranch. The overstory is dominated by black cottonwood. The understory

dominant species was evergreen blackberry. Herbaceous dominants include reed canarygrass, slough sedge and spike rush. Soils were dark in color with mottles. Hydrology was assumed based on hydrologic indicators, soils and vegetation. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.

Wetland and Impact Area Summary

Wetland Acreage	.65
Impact Area Acreage	5.45
Combined Wetland and Impact Area	6.10
Vacant Acres within the Combined Area	6.10
Number of Parcels Affected	1
Combined Parcel Acreage	75.07

Conflicting Uses by Acre and Zoning District

SITE ID	PLO	TOTAL ACRES
W-04A	.65	.65
W-04A Impact Area	5.45	5.45
Total	6.10	6.10

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	PLO	TOTAL ACRES
W-04A	.65	.65
W-04A Impact Area	5.45	5.45
Total	6.10	6.10

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

W-04a is a wetland associated with the Willamette River. The Willamette River is a water quality limited watercourse and is protected by a 75-foot setback and a site plan review requirement. The same setback and site review requirements cover the wetland.

Site Specific ESEE Analysis for W-04a

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-04a provides habitat for some wildlife species. The wetland's water-quality function is intact, but its hydrologic control function has been degraded. The site is owned by Willamalane Park and Recreation District. It is zoned for park uses and is part of the Dorris Ranch park facility. Fully allowing park uses with low impact recreational access would have limited impact on the site.

Social Consequences

The wetland has high enhancement potential and has the potential to provide both educational and recreational activities. The site is considered aesthetically pleasing. The site is not proposed for development as a natural-area park in the Willamalane Parks and Recreation District Comprehensive Plan. Fully allowing public land and park uses would provide social benefits if those uses allowed limited, low-impact access.

Economic Consequences

Fully protecting the site would mean the loss of 6.1 acres of park land with enhancement potential for recreational use. Limiting conflicting park development would allow low-impact recreational uses.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing recreational access. W-04a associated with the Willamette River which is protected by a 75-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary. The documented presence of a state and federally listed specie requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	PLO	TOTAL ACRES
W-04A	.65	.65
W-04A 75-ft. Setback	3.19	3.19
Total	3.84	3.84

About .65 acres of W-04A is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes a portion of 1 lot. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential

functions of the resource area could be preserved or enhanced. A 75-foot development setback is recommended.

A 75-foot setback would affect 3.19 acres of vacant public land. The affect of the setback on buildable land could be reduced by aligning development such that recreational facilities and other open space that is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

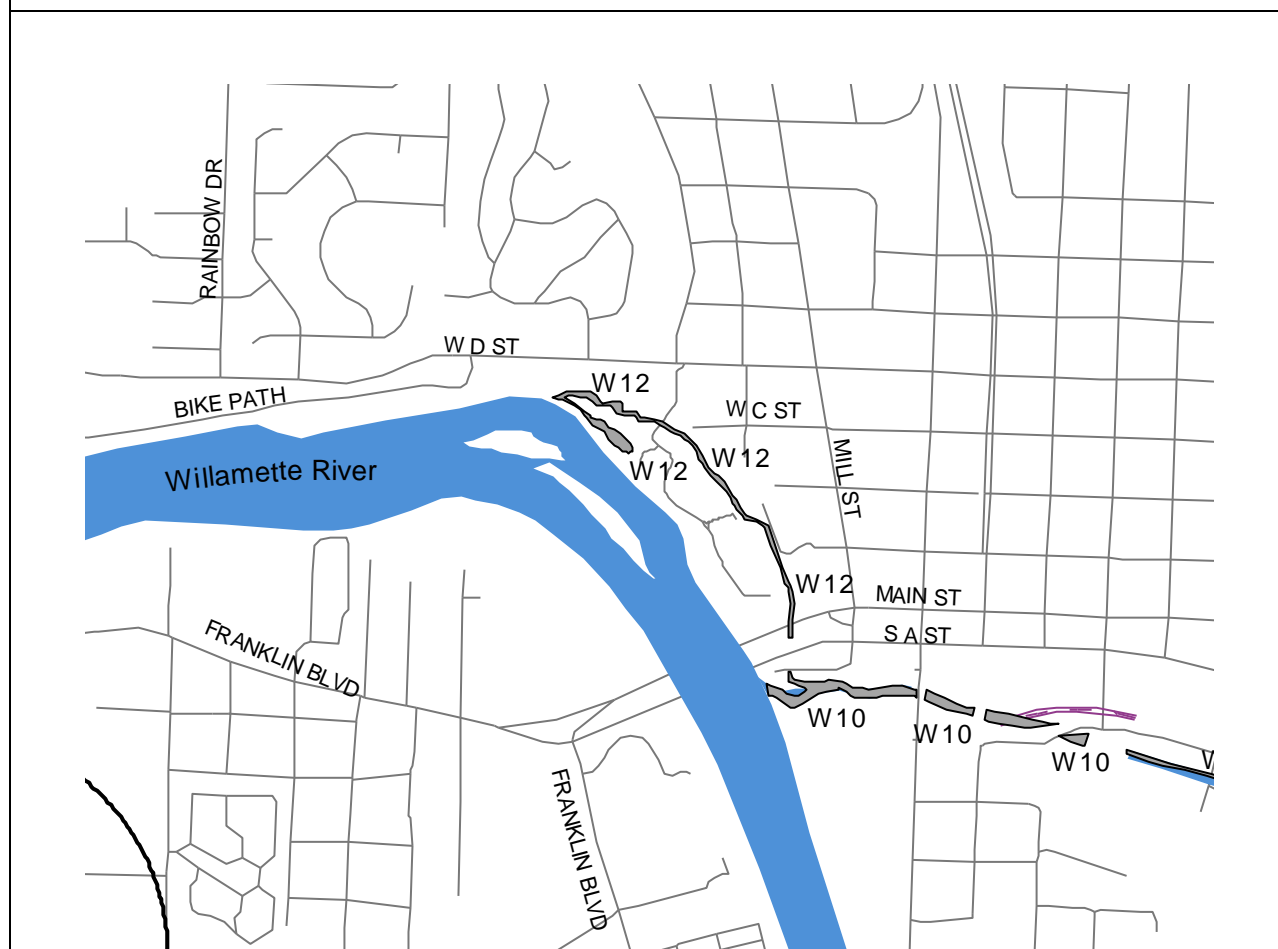
Employing low impact development practices within 150 feet of the wetland area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The resource, W-04A was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. As mentioned above, the 75-foot development setback may affect about 11.92 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site: W12 Island Park Slough	Acres: 1.15	OFWAM: Water quality function is intact; Hydrologic control function is intact; Wetland has potential for educational and recreational use. High Quality Wetlands	Springfield Waterways Channel Assessment: Island Park Slough 6.0 (Poor)
	Type: PFO		Inventoried Riparian Resource? No

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing recreational access. W-12 is a tributary to a water-quality limited watercourse (Willamette River) and is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.



Description:

Wetland W12 is 1.15 acres and classified as PFO. This wetland is located in Island Park in a relatively undisturbed, forested area adjacent to the McKenzie River. Overstory dominant species is big leaf maple. Sword fern occurs in the understory along the forested western portion of the banks. The herbaceous layer is dominated by slough sedge. The soils were dark with

mottles and saturated. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.

Additional information from the *Inventory and Channel Assessment for Springfield Waterways*

Island Park Slough Riparian Profile Details

- Plant community consisting of hardwood and mixed.
- Dominant invasive plant species: *Phalaris arundinacea* (Reed Canary-grass), and *Convolvulus sp.* (Morning Glory/Bindweed).
- Co-dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry), *Phalaris arundinacea* (Reed Canary-grass), *Hedera helix* (English Ivy), and *Convolvulus sp.* (Morning Glory/Bindweed).
- Invasive plant species listed as present: *Rubus armeniacus* (Armenian Blackberry), *Convolvulus sp.* (Morning Glory/Bindweed), *Solanum dulcamara* (Nightshade), and *Hypericum perforatum* (St John's Wort).
- Others invasive plant species seen in the system: *Holcus lanatus* (Velvet Grass), *Dipsacus fullonum* (Teasel), and *Parentucellia viscosa* (Parentucellia).
- Although nutria and beaver both have been seen numerous times in this system there were no invasive animals/amphibian recorded.
- No damage by invasive animals/amphibian was recorded.
- Osprey, Green Heron, Kingfisher, Double Crested Cormorant, Common Yellow-Throat and Mallard ducks were listed as wildlife observed.
- Although nutria, beaver, geese and ducks all have been seen numerous times in this system no wildlife evidence was recorded.
- No plant species were identified for seed collection.
- Bank stabilization, neighborhood education and riparian buffer enhancement was recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding the health ratings for all reaches together then dividing by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	7.2
Water Appearance	3.5
Nutrient Enrichment	5.4
Bank Stability	7.7
Canopy Density/Cover	3.3
Invasive Damage – P	3.0

Invasive Damage – A/A	10.0
Waste Presence	7.2
Barriers to Fish (SBW)	8.3
Insect/Invert Habitat (SBW)	7.0
In-stream Fish Cover (SBW)	4.3
Average Overall Health Rating	6.0 = Poor

Wetland and Impact Area Summary

Wetland Acreage	1.15
Impact Area Acreage	11.98
Combined Wetland and Impact Area	13.13
Vacant Acres within the Combined Area	8.87
Number of Parcels Affected	33
Combined Parcel Acreage	20.68

Conflicting Uses by Acre and Zoning District

SITE ID	CC	LD	PLO	TOTAL ACRES
W-12	.05	0	1.1	1.15
W-12 Impact Area	1.75	2.73	7.5	11.98
Total	1.80	2.73	8.6	13.13

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	CC	LD	PLO	TOTAL ACRES
W-12	.01	0	1.04	1.05
W-12 Impact Area	.41	1.19	6.22	7.82
Total	.42	1.19	7.26	8.87

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

W12 is associated with the Island Park Slough. The Slough is a tributary to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for W-12

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

The wetland provides habitat for some wildlife species. The fish habitat function has been degraded. W-12's water quality and hydrologic control functions are intact. The site is park of Island Park, a Willamalane facility that is highly developed for community use. Fully allowing conflicting uses could mean the loss of the habitat, water quality and hydrologic control functions provided by the resource.

Social Consequences

The wetland has high enhancement potential and is rated high for potential educational and recreational activities by the OFWAM analysis. It is considered aesthetically pleasing. Fully allowing conflicting uses may mean the loss of the functions the resource provides if those uses.

Economic Consequences

The resource is wholly owned by Willamalane Parks and Recreation District. The site is fully developed as a park. Fully protecting the site would mean the loss of the 1.19 acres of vacant land that is zoned for residential use inside the impact area. Limiting conflicting uses and pursuing enhancement of the resource may allow for additional recreational benefits while improving the habitat function.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing recreational access. W-12 is a tributary to a water-quality limited watercourse (Willamette River) and is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	CC	LDR	PLO	TOTAL ACRES
W-12	.01	0	1.04	1.05
W-12 50-ft. Setback	.11	.24	2.78	3.13
Total	.12	.24	3.82	4.18

About 1.05 acres of W-12 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 7 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential

functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under Article 31. No additional setback is proposed.

A 50-foot setback would affect 3.13 acres of vacant commercial, residential and public land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

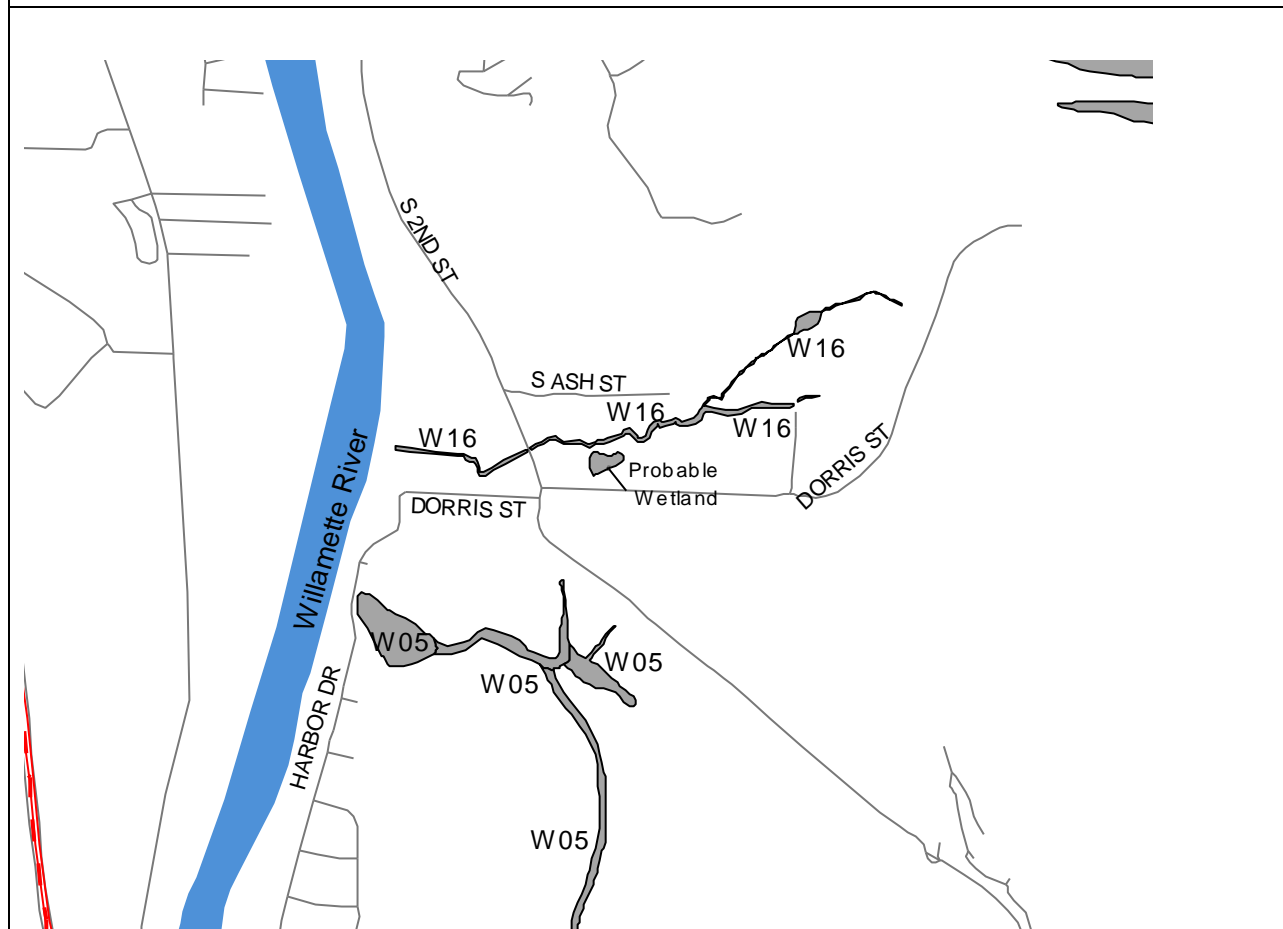
Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

W-12 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 3.13 acre impact of the setback is not attributed to this report.

Site: W16 Dorris Creek	Acres: 1.71	OFWAM: Water quality function is intact; Hydrologic control function is intact. High Quality Wetlands	Springfield Waterways Channel Assessment: Dorris Creek 7.3 Fair
	Type: PFO		Inventoried Riparian Resource? No

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing residential lands surrounding the wetland. W-16 is a tributary to a water-quality limited watercourse (Willamette River) and is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.



Description:

Wetland W16 is 1.71 acre and classified as PFO. This is a seasonal forested drainage north of Dorris Ranch, that runs along property boundaries downhill to the Willamette River. Part of the wetland limits were determined on-site and part were determined off-site using infra-red aerial photographs. The dominant vegetation along the swale was Oregon ash, rose, camas, meadow

foxtail, and red fescue. The wetland limits were determined at the boundary of the relatively incised swale where the vegetation changed and there were no longer indicators of hydrology.

Additional information from the *Inventory and Channel Assessment Report for Springfield Waterways*

Dorris Creek

Riparian Profile Details

- Plant community of mixed and one reach that is hardwood.
- Dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry) and *Phalaris arundinacea* (Reed Canary-grass).
- Co-dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry) and *Phalaris arundinacea* (Reed Canary-grass).
- Invasive plant species listed as present: *Hedera helix* (English Ivy), *Rubus armeniacus* (Armenian Blackberry), and *Holcus lanatus* (Velvet Grass).
- Others invasive plant species observed in the system: *Solanum dulcamara* (Nightshade), *Conium maculatum* (Poison hemlock), and *Dipsacus fullonum* (Teasel).
- No invasive animals/amphibian was observed.
- No damage by invasive animals/amphibian was recorded.
- A deer was recorded as wildlife observed.
- Deer scat was recorded as wildlife evidence observed.
- *Juncus patens* (Spreading rush) was recorded for seed collection.
- Neighborhood education and riparian buffer enhancement were recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding each health rating for each reach together then dividing it by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	7.8
Water Appearance	0 dry
Nutrient Enrichment	0 dry
Bank Stability	6.6
Canopy Density/Cover	8.0
Invasive Damage – P	3.8
Invasive Damage – A/A	9.4
Waste Presence	7.6
Barriers to Fish (SBW)	9.2
Insect/Invert Habitat (SBW)	8.8

In-stream Fish Cover (SBW)	4.0
Average Overall Health Rating	7.3 = Fair

Wetland and Impact Area Summary

Wetland Acreage	1.71
Impact Area Acreage	23.23
Combined Wetland and Impact Area	24.94
Vacant Acres within the Combined Area	7.60
Number of Parcels Affected	55
Combined Parcel Acreage	532.22

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	PLO	QM	TOTAL ACRES
W-16	1.7	0	.01	1.71
W-16 Impact Area	20.89	.52	1.82	23.23
Total	22.59	.52	1.83	24.94

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	PLO	QM	TOTAL ACRES
W-16	.69	0	0	.69
W-16 Impact Area	6.91	0	0	6.91
Total	7.60	0	0	7.60

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

W16 is associated with the Dorris Creek. The creek is a tributary to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for W-16

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-16 is rated a “High Quality Wetlands.” It provides habitat for some wildlife species. The wetland’s water quality and hydrologic control functions are still intact. Fully allowing conflicting uses would mean the loss of these functions.

Social Consequences

The wetland has high enhancement potential. It was judged not to be appropriate for educational uses by the OFWAM analysis. The wetland is not aesthetically pleasing. Fully allowing conflicting uses would mean the loss of a potential neighborhood amenity if the wetland were enhanced.

Economic Consequences

Fully protecting W-16 from conflicting uses would mean the loss of 7.6 acres of vacant residential land within the combined wetland and impact area boundaries. Limiting conflicting uses could allow development to occur, tempered by low impact development practices that would conserve much of the natural function of the wetland.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing residential lands surrounding the wetland. W-16 is a tributary to a water-quality limited watercourse (Willamette River) and is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	TOTAL ACRES
W-16	.69	.69
W-16 50-ft. Setback	2.69	2.69
Total	3.38	3.38

About .69 acres of W-16 is classified as vacant by the Lane County Assessor’s Office. The vacant acreage includes portions of 8 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under Article 31. No additional setback is proposed.

A 50-foot setback would affect 2.69 acres of vacant commercial, residential and public land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

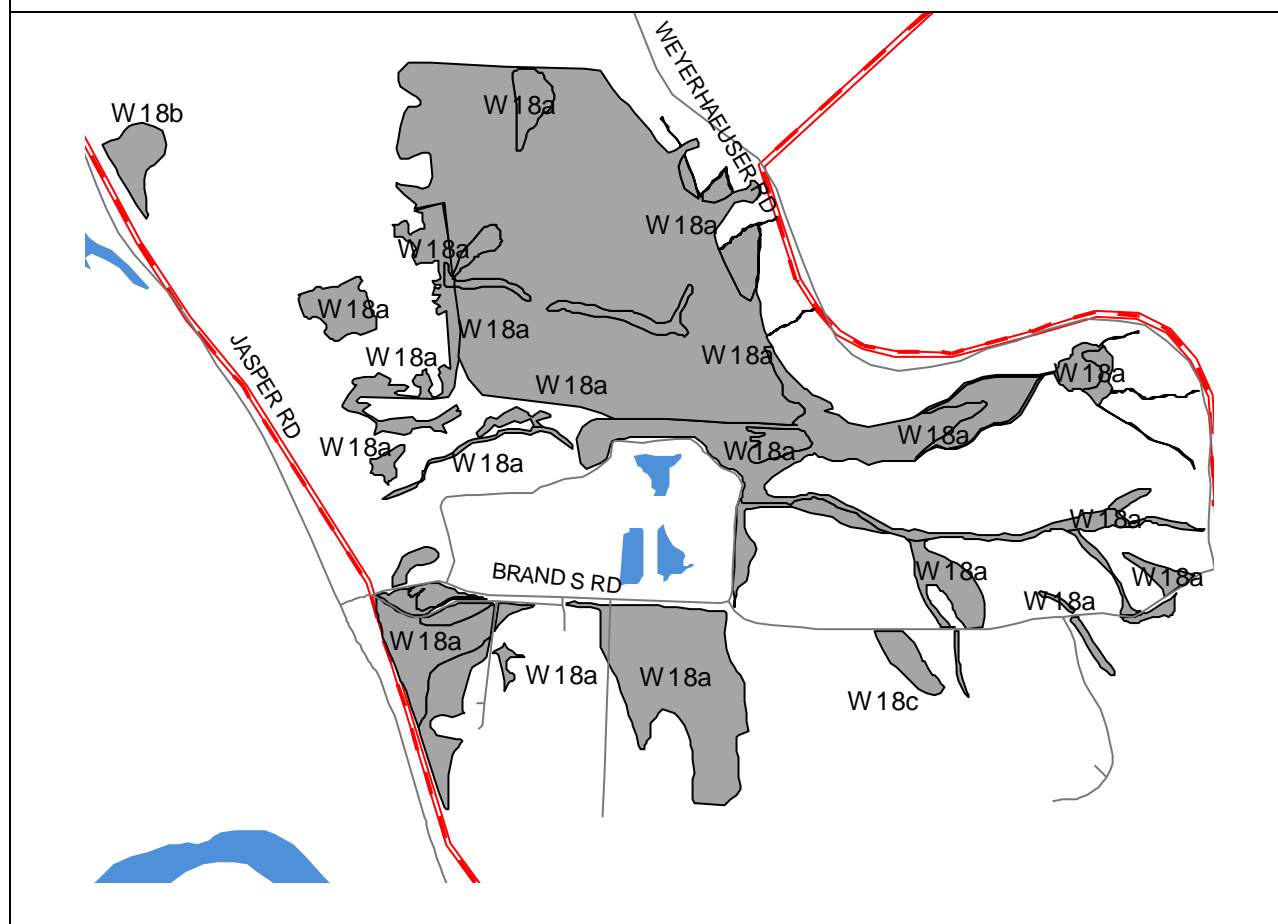
Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

W-16 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 2.69 acre impact of the setback is not attributed to this report.

Site: W18a Natron	Acres: 108.00	OFWAM: Water quality function is intact; Hydrologic function is intact. High Quality Wetlands	Springfield Waterways Channel Assessment: Not Assessed
	Type: PEM, PFO		Related Riparian Resource? Yes: S07 WHA Score: 34 Moderate Quality Resource

Goal 5 Recommendation: Limit conflicting uses that may impact the wetland. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.



Description:

Wetland W18a is 108 acres and classified as PEM/PFO. This is a large complex of wetlands located between hillside drainages and minor topographical folds in the Natron area, southeast of Springfield. All drainages flow in a generally southerly course into the Willamette River via culverts or as groundwater beneath the Jasper-Lowell Hwy. Dominant vegetation consisted of

Oregon ash, black cottonwood, Kentucky bluegrass, crested dogtail, common plantain, Indian plum, Siberian candyflower, piggy-back plant, tall fescue, sweet vernal grass, meadow foxtail, suckling clover and white clover. Wetland limits were determined onsite where the vegetation changed and there were no longer hydrological indicators.

Wetland and Impact Area Summary

Wetland Acreage	108.00
Impact Area Acreage	136.51
Combined Wetland and Impact Area	244.51
Vacant Acres within the Combined Area	56.20
Number of Parcels Affected	28
Combined Parcel Acreage	622.55

Conflicting Uses by Acre and Zoning District

SITE ID	CC	LDR	LM	SHI	TOTAL ACRES
W-18A	5.67	20.18	70.62	11.53	108.00
W-18A Impact Area	7.58	30.34	65.41	33.18	136.51
Total	13.25	50.52	136.03	44.71	244.51

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	CC	LDR	LM	SHI	TOTAL ACRES
W-18A	0	7.35	27.21	0	34.56
W-18A Impact Area	0	4.26	17.38	0	21.64
Total	0	11.61	44.59	0	56.20

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

The Oregon Division of State Lands and the US Army Corps of Engineers are coordinating the development of an area wide wetlands management plan for the Natron corridor which includes W18a. The planning process for that effort is related to the construction of the proposed Jasper Road Extension which will bisect the area and open it to future development. The Jasper Wetland Plan will address the cumulative impacts of the new road on the wetlands in the corridor, including the impact of future development that will be encouraged when construction is complete. Additional protections for W-18a may stem from that planning process.

Site Specific ESEE Analysis for W-18a

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-18a is a large wetland complex that is rated a “High Quality Wetlands.” The wetland area has been historically disturbed by agricultural activities. Most of the wetland area currently serves as pasture for cattle grazing. The wetland’s water-quality and hydrologic control functions are intact. Fully allowing conflicting residential, commercial and industrial uses would mean the loss of these functions.

Social Consequences

The OFWAM analysis indicated that the wetland is not appropriate for educational or recreational purposes, but it is considered aesthetically pleasing. The wetland has a high enhancement potential. The Willamalane Parks and Recreation District Comprehensive Plan shows this area as a location for both a proposed community park and a proposed natural-area park.

Economic Consequences

Fully protecting the wetland from conflicting uses would mean the loss of 56.20 acres of vacant industrial and residential land within the combined wetland and impact area boundaries. W-18a is part of the largest Greenfield development areas in Oregon that is within an existing Urban Growth Boundary. The development potential of the area will be dramatically increased with the completion of Phase II of the Jasper Road Extension which will bisect the area and open it to new development. Limiting conflicting uses could allow development to occur, tempered by low impact development practices that would conserve much of the natural function of the wetland.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the wetland. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	LMI	TOTAL ACRES
W-18A	7.35	27.21	34.56

W-18A 25-ft. Setback	.94	4.21	5.15
Total	8.29	31.42	39.71

About 34.56 acres of W-18A is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 2 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect 5.15 acres of vacant residential and industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space that is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

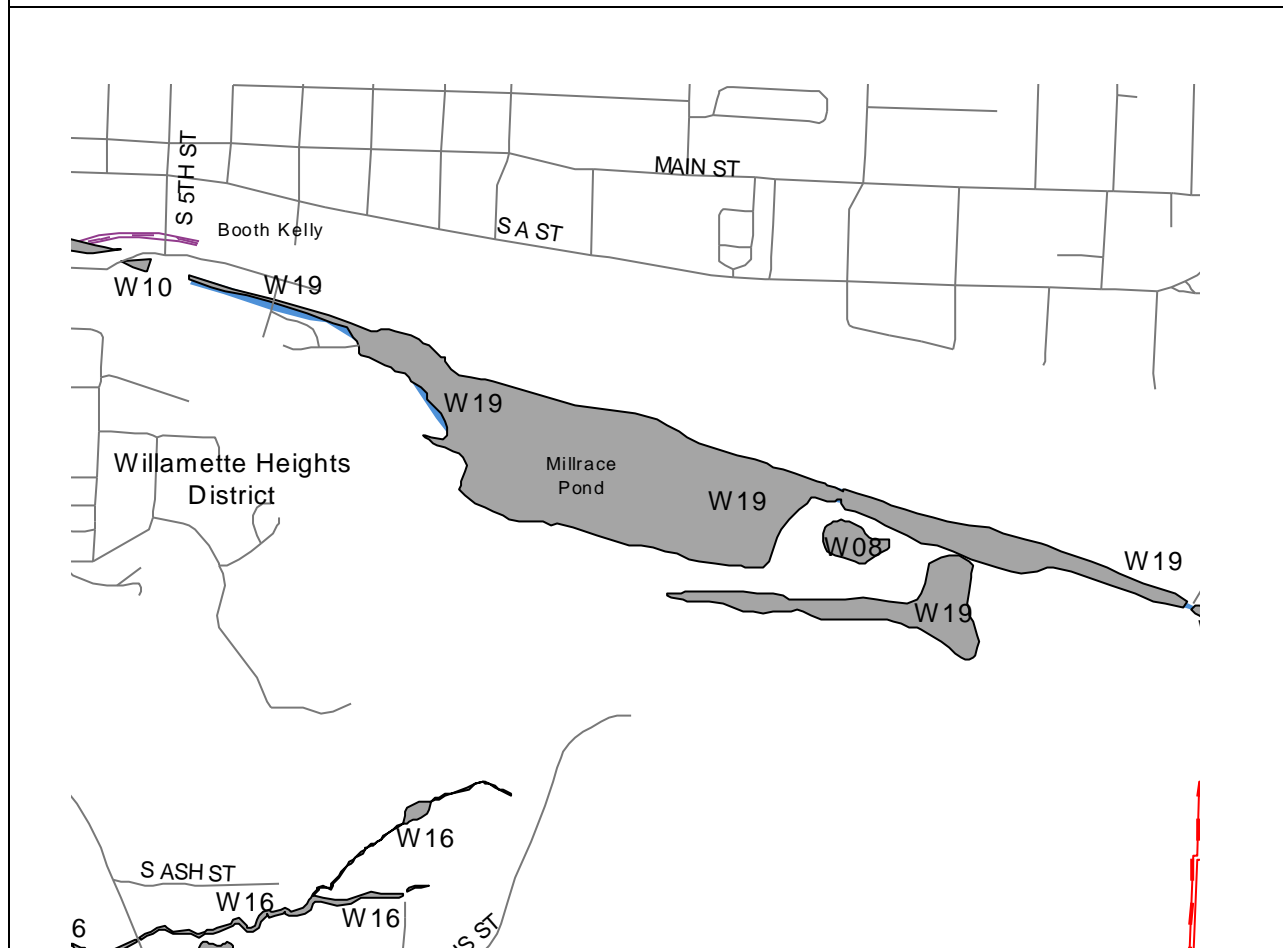
Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

W-18A was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about 5.15 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site: W19 Millrace and Pond	Acres: 41.65	OFWAM: Hydrologic function is intact; Wetland has potential for enhancement. High Quality Wetlands	Springfield Waterways Channel Assessment: Not Assessed
	Type: POW, PFO		Inventoried Riparian Resource? Yes: S03, S04 WHA Score: S03: 61-62 Moderate Quality Resource

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. The Springfield Millrace is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.



Description:

Wetland W19 is 41.65 acres and classified as POW/PFO. The wetlands were determined through on- and off-site methods. The wetlands are adjacent to the Springfield sheriff's pistol range and the portion of the Mill Race that has been widened to create a log pond for a mill. Soils were dark in color with mottles. Hydrology was indicated by the dominance of hydrophytic vegetation and presence of surface water in depressions. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology and through use of black and white and infrared aerial photo interpretation and are limited to TOB.

Wetland and Impact Area Summary

Wetland Acreage	41.65
Impact Area Acreage	53.67
Combined Wetland and Impact Area	95.32
Vacant Acres within the Combined Area	7.01
Number of Parcels Affected	10
Combined Parcel Acreage	488.47

Conflicting Uses by Acre and Zoning District

SITE ID	BK	HI	LDR	QM	TOTAL ACRES
W-19	24.08	15.12	0	2.45	41.65
W19 Impact Area	15.83	29.9	.06	7.88	53.67
Total	39.91	45.02	.06	10.33	95.32

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	BK	HI	LDR	QM	TOTAL ACRES
W-19	.13	1.0	0	0	1.13
W19 Impact Area	.99	4.83	.06	0	5.82
Total	1.12	5.83	.06	0	7.01

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes**

W19 is associated with the Millrace and Mill Pond. The Millrace and pond are tributaries to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for W-19

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-19 is rated a High Quality Wetlands. W-19 overlaps the riparian resource site, S-03. S-03 has a WHA score of 61-62, making it a High Quality Resource site as well. The high WHA score reflects the high habitat value of the wetland. The wetland's water quality and hydrologic control functions are intact. W-19 serves as a receiving stream for much of the storm water runoff from neighborhoods in south Springfield. Efforts are being made by the City to purchase land adjacent to the millrace as part of a long term effort to restore and enhance the millrace as wetland and riparian habitat. The US Army Corps of Engineers is also involved and may invest in future restoration efforts. Fully allowing conflicting industrial uses would mean the loss of the wetlands water-quality, hydrologic control and stormwater management functions.

Social Consequences

The Springfield Millrace, constructed in 1852, is an important historical, aesthetic, and natural feature in the City of Springfield. The Willamalane Parks and Recreation Comprehensive Plan shows the area to be a proposed location for a natural-area park. Fully allowing conflicting industrial uses surrounding the wetland would mean the loss of this important cultural resource.

Economic Consequences

Fully protecting W-19 will mean the loss of 7.01 acres of industrial and residential lands. W-19 is largely bounded by industrially zoned land that is City owned. The City has been acquiring property adjacent to the wetland as part of a long term vision for restoring and preserving the millrace as cultural and natural resource. Given that the land adjacent to the W-19 is publicly owned, the actual loss of the land for industrial use is very limited.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. The Springfield Millrace is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	BK	HI	TOTAL ACRES
W-19	.13	1.00	1.13
W-19 50-ft. Setback	.47	1.69	2.16
Total	.6	2.69	3.29

About 1.13 acres of W-19 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 4 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under Article. No additional setback is proposed.

A 50-foot setback would affect 3.29 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

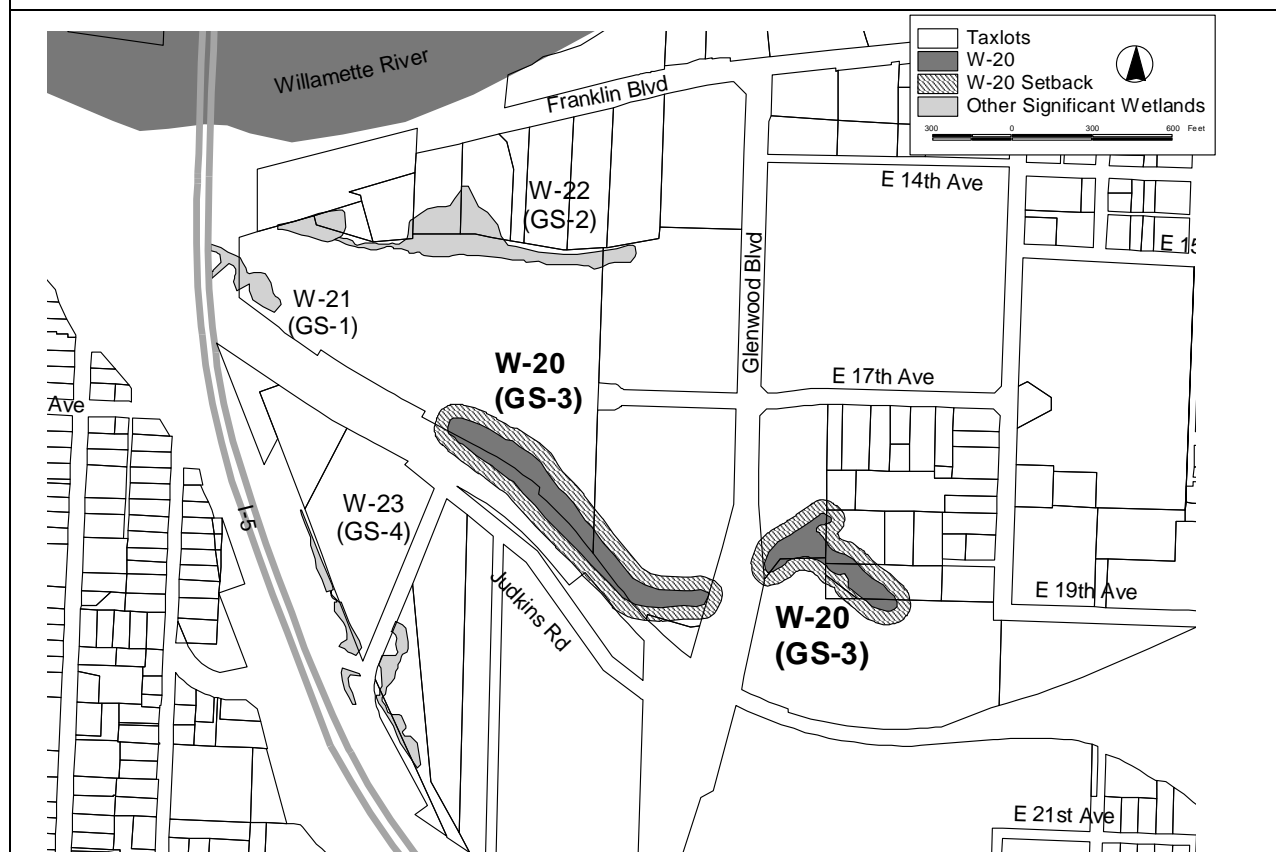
Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The wetland, W-19 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the wetland acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 3.29 acre impact of the setback is not attributed to this report.

Site: W-20 (GS-3)	Acres: 3.73	OFWAM: Locally Significant Wetland is within ¼ mile of DEQ 303 (d) listed water body Wetland has a direct surface water connection to a salmonid stream Moderate Quality Wetlands	Associated Inventoried Riparian Resource? Yes: S-25 WHA Score: 46-47 High Quality Resource
	Cowardin Class: Palustrine Scrub-Shrub (PSS), Wetland with <30% canopy cover of shrubs or small trees Palustrine Unconsolidated Bottom (PUB) Wetland with <30% vegetation cover and a surface with >25% of the particles smaller than stones.		

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the wetland. W-20 is associated with the Glenwood Slough (S-25, formerly E-39). The Slough is protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the Slough also protects W-20. Any portion of W-20 not protected by the Glenwood Slough 50-foot setback should be protected by a 25-foot setback under the provisions of SDC 4.3-117.



Description:

W-20 is a Palustrine Shrub-Scrub wetland. It is part of a system known as the Glenwood Slough. It flows northwest into W-21 prior to being culverted and flowing into the Willamette River. W-20 is bisected by Glenwood Blvd, but is still hydrologically connected by a culvert. The Slough is a topographic bowl. Hydrologic sources include stormwater from adjacent impervious surfaces, in addition to groundwater and upslope surface water. A portion of W-20 was previously delineated (WD96-0375).

Dominant Wetland Vegetation			
Trees/ Shrubs		Vines/ Herbs	
<i>Fraxinus latifolia</i>	Oregon Ash	<i>Mentha arvensis</i>	Field mint
<i>Salix sitchenius</i>	Sitka Willow	<i>Biden sp.</i>	Begger's tick.
<i>Cornus stolonifera</i>	Red-Osier Dogwood	<i>Juncus effusus</i>	Soft Rush
		<i>Carex leptopoda</i>	Short-Scale Sedge

Adjacent upland species: *Symphoricarpos albus*, *Rubus discolor*, *Cornus stolonifera*, *Rubus ursinus*, *Corylus cornuta*, *Fraxinus latifolia*, *Carex leptopoda*, *Dipsacus sylvestris*, *Tolmiea menziesii*

Soils—Mapped Series	Chehalis silty clay loam
Hydrologic Source	Groundwater

Wetland and Impact Area Summary

Wetland Acreage	3.73
Impact Area Acreage	11.74
Combined Wetland and Impact Area	15.50
Vacant Acres within the Combined Area	3.73
Number of Parcels Affected	14
Combined Parcel Acreage	51.26

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	PLO	LMI	TOTAL ACRES
W-20	.11	0	2.88	*2.99
W-20 Impact Area	1.07	.89	9.78	11.74
Total	1.18	.92	12.66	14.73

*This number varies from the total wetland acreage since portions of the wetland and its impact area are within railroad and street right-of-way which have no zoning.

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	PLO	LMI	TOTAL ACRES
W-20	0	0	.13	.13
W-20 Impact Area	0	.89	2.71	3.60

SITE ID	LDR	PLO	LMI	TOTAL ACRES
Total	0	.89	2.84	3.73

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in Section 4.3-115 of the Springfield Development Code? **Yes.**

W-20 is associated with the Glenwood Slough (S-25, formerly E-39). The Slough is a tributary to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and a site plan review requirement.

The Glenwood Refinement Plan includes policies that give direction for environmental design affecting S-25 (formerly E-39). The Refinement Plan states, “Significant wetland areas in Glenwood shall be protected from encroachment and degradation in order to retain their important functions and values related to fish and wildlife habitat, flood control, sediment, and erosion control, water quality control, and ground water pollution control,” (Policy 1, pg. 92, Environmental Element).

Site Specific ESEE Analysis for W-20

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-20 is rated as a “Moderate Quality Wetland.” The wetland overlaps with a riparian resource site, S-25. S-25 is rated as a “High Quality Resource” site with a WHA score of 46-47. The OFWAM analysis concluded that the wetland’s water quality and hydrologic control functions are impacted or degraded. The resource provides habitat for some species, although the fish habitat is degraded. Fully allowing conflicting uses would mean the loss of what little function and habitat that W-20 does provide.

Social Consequences

The OFWAM analysis indicates that W-20 is not aesthetically pleasing, nor is it appropriate for educational or recreational uses. The Willamalane Park and Recreation District Comprehensive Plan shows no anticipated park facilities or natural areas near the resource site. The site has moderate potential for enhancement which may make it more of a community amenity.

Economic Consequences

The OFWAM analysis indicates that the water quality and hydrologic control functions of the resource are already degraded. These functions could be mimicked using engineered facilities at

a significant cost. Fully protecting the resource site would mean the loss of 3.73 acres of vacant industrial land within the combined wetland and impact area boundaries.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the wetland. W-20 is associated with the Glenwood Slough (S-25, formerly E39). The slough is protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the slough also protects W-20. Any portion of W-20 not protected by the Glenwood Slough 50-foot setback should be protected by a 25-foot setback under provisions of SDC Section 4.3-117.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	PLO	LMI	TOTAL ACRES
W-20	0	.13	.13
W-20 50-ft. Setback	.03	.67	.70
Total	.03	.80	.83

About .13 acres of W-20 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 1 lot. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under Section 4.3-115 of the Springfield Development Code. No additional setback is proposed.

A 50-foot setback would affect .67 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under SDC 4.3-115.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in SDC 4.3-115.

Reduction in the Buildable Land Inventory:

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of commercial and industrial lands. The Springfield Residential Lands Study (RLS)

that was also completed in 2009 identified a small surplus of residential lands. These inventories include some Glenwood sites and classified each as “Vacant,” or “Redevelopable.” These classifications are not the same used by the Lane County Assessor’s Office. These classifications stem from judgments made by ECONorthwest in collaboration with a steering committee that helped frame assumptions about what is redevelopable and vacant.

Protecting W-20 and its 50-foot setback area from future development effectively reduces the CIBL inventory by a total of .73 acres and the RLS by a total of .44 acres, for a total of 1.17 acres.

**Impact of Recommended Protection on
Commercial, Industrial and Residential Land Inventories**

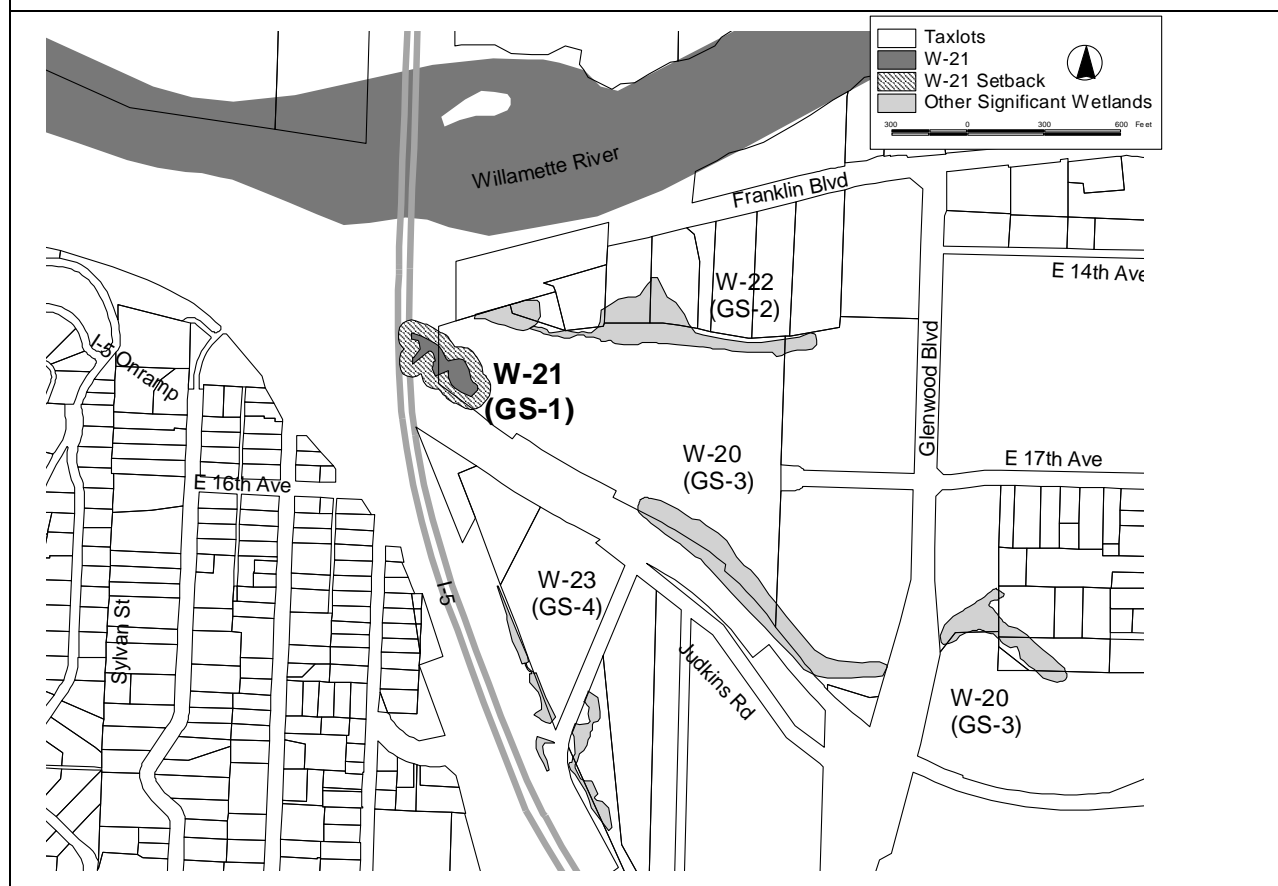
Site W-20 Zoning	Redevelopable	Vacant	Total Acres
LDR	.44	0	.44
LMI	.71	.02	.73
Total Acres	1.15	.02	1.17

The cumulative effect of fully protecting all commercial and industrial lands that are impacted by riparian or wetland resources could increase the need for UGB expansion to meet land needs.

A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 1.17 impact of protecting W-20 with the setback is not attributed to this report.

Site: W-21 (GS-1)	Acres: .47	OFWAM: Locally Significant Wetland is within ¼ mile of DEQ 303 (d) listed water body Wetland has a direct surface water connection to a salmonid stream Moderate Quality Wetlands	Associated Inventoried Riparian Resource? Yes: S-25 WHA Score: 46-47 High Quality Resource
	Cowardin Class: Palustrine Scrub Shrub (PSS) Wetland with <30% canopy cover of shrubs or small trees.		

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the wetland. W-21 is associated with the Glenwood Slough (S-25). The slough is protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the slough also protects W-21. Any portion of W-21 not protected by the Glenwood Slough 50-foot setback should be protected by a 25-foot setback under the provisions of SDC 4.3-117.



Description:

Wetland W-21 is .47 acres and classified as a Palustrine Shrub-Scrub (PSS) wetland. The wetland is located under and east of the Interstate 5 Bridge just south of Franklin Blvd. W-21 was delineated in 2003 (WD2003-0273) as part of the ODOT's I-5 bridge project and Willamette River trail. The west portion was impacted by construction of the I-5 temporary detour bridge. W-21 is bounded to the south by railroad tracks. Glenwood Slough flows through the wetland as do several channels used to convey stormwater. The wetland is less than one-half acre and is a judged locally significant wetland because of its hydrologic connection to the Willamette River. It is also connected to W22 and W23.

Dominant Wetland Vegetation			
Trees/ Shrubs		Vines/ Herbs	
<i>Fraxinus latifolia</i>	Oregon Ash	<i>Carex obnupta</i>	Slough Sedge
<i>Populus trichocarpa</i>	Black Cottonwood	<i>Ranunculus repens</i>	Creeping Butter-Cup
<i>Cornus stolonifera</i>	Red-Osier Dogwood		
<i>Salix lasiandra</i>	Pacific Willow		

Adjacent upland species: *Populus trichocarpa*, *Alnus rubra*, *Fraxinus latifolia*, *Cornus stolonifera*, *Robinia pseudoacacia*, *Rubus discolor*, *Cytisus scoparius*, *Festuca arundinaceae*, *Plantago lanceolata*, *Lathyrus latifolius*, *Daucus carota*, *Cirsium arvense*, *Dipsacus sylvestris*, unidentified mixed grasses

Soils—Mapped Series	Chehalis silty clay loam, Pengra-Urban land complex
Hydrologic Source	Groundwater

Wetland and Impact Area Summary

Wetland Acreage	.47
Impact Area Acreage	4.54
Combined Wetland and Impact Area	5.01
Vacant Acres within the Combined Area	0
Parcels Affected (Including Impact Area)	2
Combined Parcel Acreage	43.54

Conflicting Uses by Acre and Zoning District

SITE ID	LMI	TOTAL ACRES
W-21	.31	*.31
W-21 Impact Area	4.54	4.54
Total	4.85	4.85

*Portions of the wetland fall within right-of-way which has no zoning designation; thus this figure is less than that shown above for wetland acreage.

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LM	TOTAL ACRES
W-21	0	0*
W-21 Impact Area	0	0*
Total	0	0*

*W-21 lies within County owned land that has been developed as a Solid Waste Transfer Site. The wetland is located within ODOT and Union Pacific right-of-way that bisects the County property. What appears to be vacant resource land within the County parcel is in fact committed for transportation uses.

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in Section 4.3-115 of the Springfield Development Code? **Yes.**

W-21 is associated with the Glenwood Slough. The Slough is a tributary to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and a site plan review requirement. This 50-foot setback also protects W-21. Any portion of W-21 not protected by the Glenwood Slough 50-foot setback should be protected by a 25-foot setback under provisions of SDC Section 4.3-117.

The Glenwood Refinement Plan includes policies that give direction for environmental design affecting S-25 (formerly E-39). The Refinement Plan states, “Significant wetland areas in Glenwood shall be protected from encroachment and degradation in order to retain their important functions and values related to fish and wildlife habitat, flood control, sediment, and erosion control, water quality control, and ground water pollution control,” (Policy 1, pg. 92, Environmental Element).

Site Specific ESEE Analysis for W-21

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-21 is rated as a “Medium Quality Wetlands.” The wetland overlaps with a riparian resource site, E-39. E-39 is rated as a “High Quality Resource” site with a WHA score of 46-47. The OFWAM analysis indicates that the wetland’s water quality and hydrologic control functions are degraded. The resource provides habitat for some species, although the fish habitat is degraded. Fully allowing conflicting uses would mean the loss of what little function and habitat that W-21 does provide.

Social Consequences

The OFWAM analysis concluded that W-21 is not aesthetically pleasing, nor is it appropriate for educational or recreational uses. The Willamalane Park and Recreation District Comprehensive Plan shows no anticipated park facilities or natural areas near the resource site. The site has high potential for enhancement which may make it more of a community amenity.

Economic Consequences

The OFWAM analysis indicates that the water quality and hydrologic control functions of the resource are already degraded. These functions could be mimicked using engineered facilities, but at a significant cost. Portions of the affected tax lot have been developed as Lane County's Glenwood Solid Waste Transfer Site. The wetland itself is located beneath the Willamette River I-5 Bridge and adjacent to the Union Pacific Railway right-of-way. Fully protecting the resource site would mean no loss to the remaining vacant industrial land within the combined wetland and impact area boundaries.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the wetland. W-21 is associated with the Glenwood Slough. The slough is protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the slough also protects W-21. Any portion of W-21 not protected by the Glenwood Slough 50-foot setback should be protected by a 25-foot setback under provisions of SDC Section 4.3-117.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LMI	TOTAL ACRES
W-21	0	0
W-21 50-ft. Setback	0	0
Total	0	0

The land containing W-21 is not classified as vacant by the Lane County Assessor's Office. Limiting conflicting uses would allow some re-development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under SDC Section 4.3-115. This 50-foot setback protecting the slough also protects W-21. Any portion of W-21 not protected by the Glenwood Slough 50-foot setback should be protected by a 25-foot setback.

A 50-foot setback would not affect any vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under SDC Section 4.3-115.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in SDC Section 4.3-115.

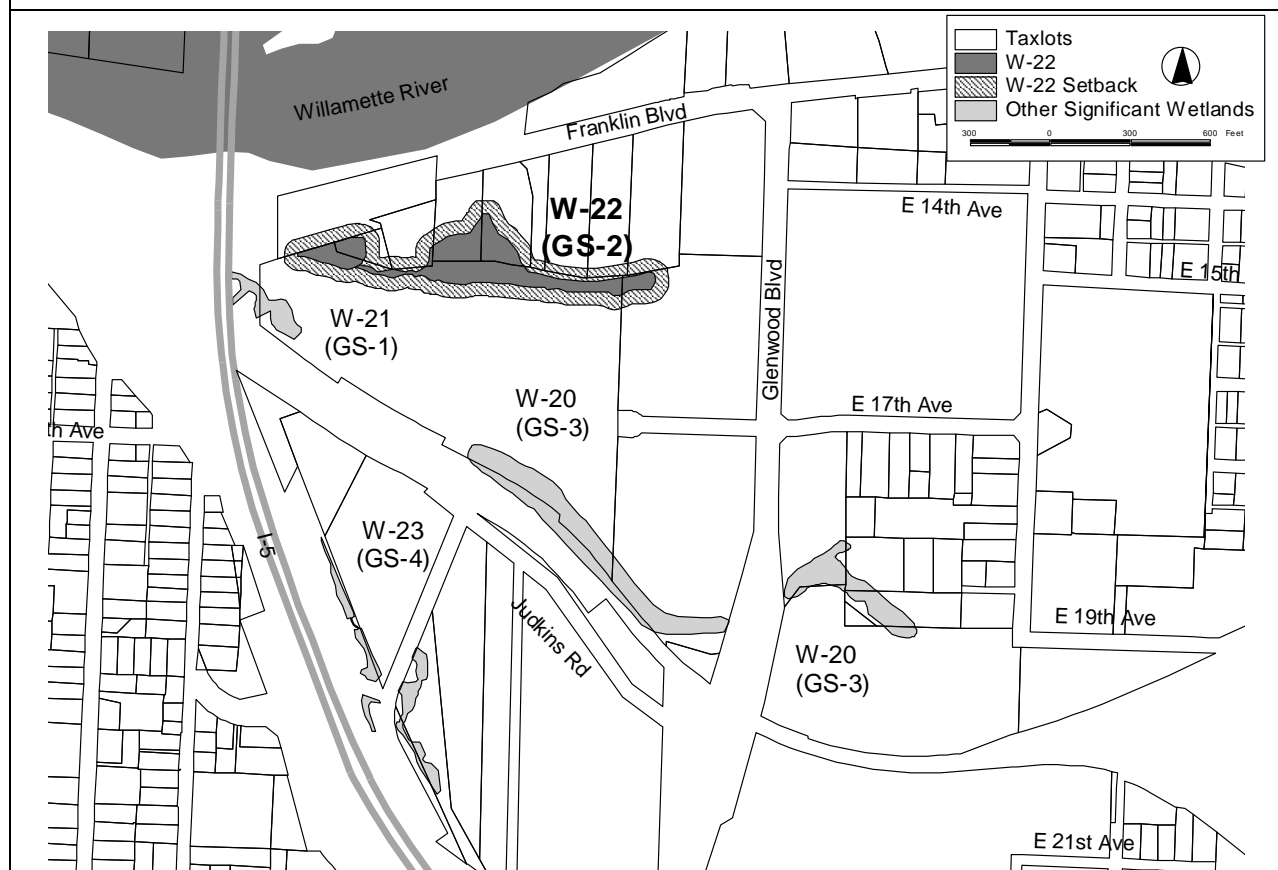
Reduction in the Buildable Land Inventory:

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of commercial and industrial lands. The Springfield Residential Lands Study (RLS) that was also completed in 2009 identified a small surplus of residential lands. These inventories include some Glenwood sites and classified each as “Vacant,” or “Redevelopable.” These classifications are not the same used by the Lane County Assessor’s Office. These classifications stem from judgments made by ECONorthwest in collaboration with a steering committee that helped frame assumptions about what is redevelopable and vacant.

Neither the CIBL nor the RLS showed W-21 or its setbacks as inventoried land. Protecting W-21 will not cause a reduction in those inventories.

Site: W-22 (GS-2)	Acres: 2.53	OFWAM: Locally Significant Wetland is within ¼ mile of DEQ 303 (d) listed water body Wetland has a direct surface water connection to a salmonid stream Moderate Quality Wetlands	Inventoried Riparian Resource? Yes: S-25 WHA Score: 46-47 High Quality Resource
	Cowardin Class: Palustrine Forested (PFO) Wetland with trees growing in standing water or saturated soils, or small wetlands entirely beneath an overhanging forest canopy.		

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the wetland. W-22 is associated with the Glenwood Slough (S-25). The slough is protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the slough also protects W-22. Any portion of W-22 not protected by the Glenwood Slough 50-foot setback should be protected by a 25-foot setback under the provisions of SDC 4.3-117.



Description:

Wetland W-22 is 2.53 acres and is classified as a Palustrine Forested wetlands (PFO). W-22 is a PFO system located with a drainage that flows through the southern portion. Portions of the wetland have been previously delineated (WD's 03-0273, 00-0102, 98-0051). PHS did not have access to the easternmost and southern portions of W-22 and boundaries were determined through off-site observations, previous delineations, and aerial photography.

Dominant Wetland Vegetation			
Trees/ Shrubs		Vines/ Herbs	
<i>Fraxinus latifolia</i>	Oregon Ash	<i>Carex obnupta</i>	Slough Sedge
<i>Populus trichocarpa</i>	Black Cottonwood	<i>Biden sp.</i>	Begger's tick.
<i>Cornus stolonifera</i>	Red-Osier Dogwood	<i>Juncus effusus</i>	Soft Rush
<i>Salix lasiandra</i>	Pacific Willow	<i>Lapsana communis</i>	Nipplewort
<i>Alnus Ruba</i>	Red Alder		
<i>Rosa piscocarpa</i>	Clustered Wild Rose		

Adjacent upland species: *Acer macrophyllum*, *Fraxinus latifolia*, *Populus trichocarpa*, *Rubus discolor*, *Symphoricarpos alba*, *Corylus cornuta*, *Cytisus scoparium*, *Holodiscus discolor*, *Hypericum perforatum*, *Festuca arundinacea*, mowed unidentified grasses

Soils—Mapped Series	Chehalis silty clay loam
Hydrologic Source	Groundwater

Wetland and Impact Area Summary

Wetland Acreage	2.53
Impact Area Acreage	12.22
Combined Wetland and Impact Area	14.75
Vacant Acres within the Combined Area	2.84
Parcels Affected (Including Impact Area)	12
Combined Parcel Acreage	67.43

Conflicting Uses by Acre and Zoning District

SITE ID	LMI	TOTAL ACRES
W-22	2.53	2.53
W-22 Impact Area	12.22	12.22
Total	14.75	14.75

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LM	TOTAL ACRES
W-22	.56	.56
W-22 Impact Area	2.28	2.28
Total	2.84	2.84

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in Section 4.3-115 of the Springfield Development Code? **Yes.**

W-22 is associated with the Glenwood Slough-North Channel (S-25). The channel is a tributary to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and a site plan review requirement.

The Glenwood Refinement Plan includes policies that give direction for environmental design affecting S-25 (formerly E-39). The Refinement Plan states, “Significant wetland areas in Glenwood shall be protected from encroachment and degradation in order to retain their important functions and values related to fish and wildlife habitat, flood control, sediment, and erosion control, water quality control, and ground water pollution control,” (Policy 1, pg. 92, Environmental Element).

Site Specific ESEE Analysis for W-22

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-22 is rated as a “Moderate Quality Wetland.” The wetland overlaps with a riparian resource site, S-25. S-25 is rated as a “High Quality Resource” site with a WHA score of 46-47. The OFWAM analysis concluded that W-22’s water quality and hydrologic control functions are impacted or degraded. The resource provides habitat for some wildlife species, although the fish habitat is degraded. Fully allowing conflicting uses would mean the loss of what little function and habitat that W-22 provides.

Social Consequences

The OFWAM analysis indicates that W-22 is not aesthetically pleasing, nor is it appropriate for educational or recreational uses. The Willamalane Park and Recreation District Comprehensive Plan shows no anticipated park facilities or natural areas near the resource site. The site has moderate potential for enhancement which may make it more of a community amenity.

Economic Consequences

The OFWAM analysis indicates that the water quality and hydrologic control functions of the resource are already degraded. These functions could be mimicked using engineered facilities at a significant cost. Fully protecting the resource site would mean the loss of 2.84 acres of vacant industrial land within the combined wetland and impact area boundaries.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the wetland. W-22 is associated with the Glenwood Slough-North Channel (S-25, formerly E39). The channel is protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the channel also protects W-22.

A small portion of W-22 (about .06 acres) is not protected by the 50-ft setback provided by the stormwater WQLW standards found in SDC Section 4.3-115. This unprotected segment of W-22 should be covered by a 25-foot development setback and the protections afforded by SDC Section 4.3-117. Any portion of W-22 not protected by the Glenwood Slough-North Channel 50-foot setback should be protected by a 25-foot setback.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LMI	TOTAL ACRES
W-22	.56	.56
W-22 25 to 50-ft. Setback	.79	.79
Total	1.35	1.35

About .56 acres of W-22 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 3 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under SDC Section 4.3-115. A small portion of W-22 (about .05 vacant acres) is not protected by the 50-ft setback, but is protected by a 25-foot setback under the provisions of SDC Section 4.3-117. A 25-foot setback applied to the unprotected wetland area affects about .09 acres of the total setback acres shown for W-22.

A 25 to 50-foot setback would affect .79 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other

open space are within the setback. Stormwater management facilities required for development can be placed within the setback under SDC Section 4.3-115.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in SDC Section 4.3-115.

Reduction in the Buildable Land Inventory:

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of commercial and industrial lands. The Springfield Residential Lands Study (RLS) that was also completed in 2009 identified a small surplus of residential lands. These inventories include some Glenwood sites and classified each as “Vacant,” or “Redevelopable.” These classifications are not the same used by the Lane County Assessor’s Office. These classifications stem from judgments made by ECONorthwest in collaboration with a steering committee that helped frame assumptions about what is redevelopable and vacant.

Protecting W-22 and its 25-50 foot setback area from future development effectively reduces the CIBL inventory by a total of 2.26 acres.

Impact of Recommended Protection on Commercial, Industrial and Residential Land Inventories

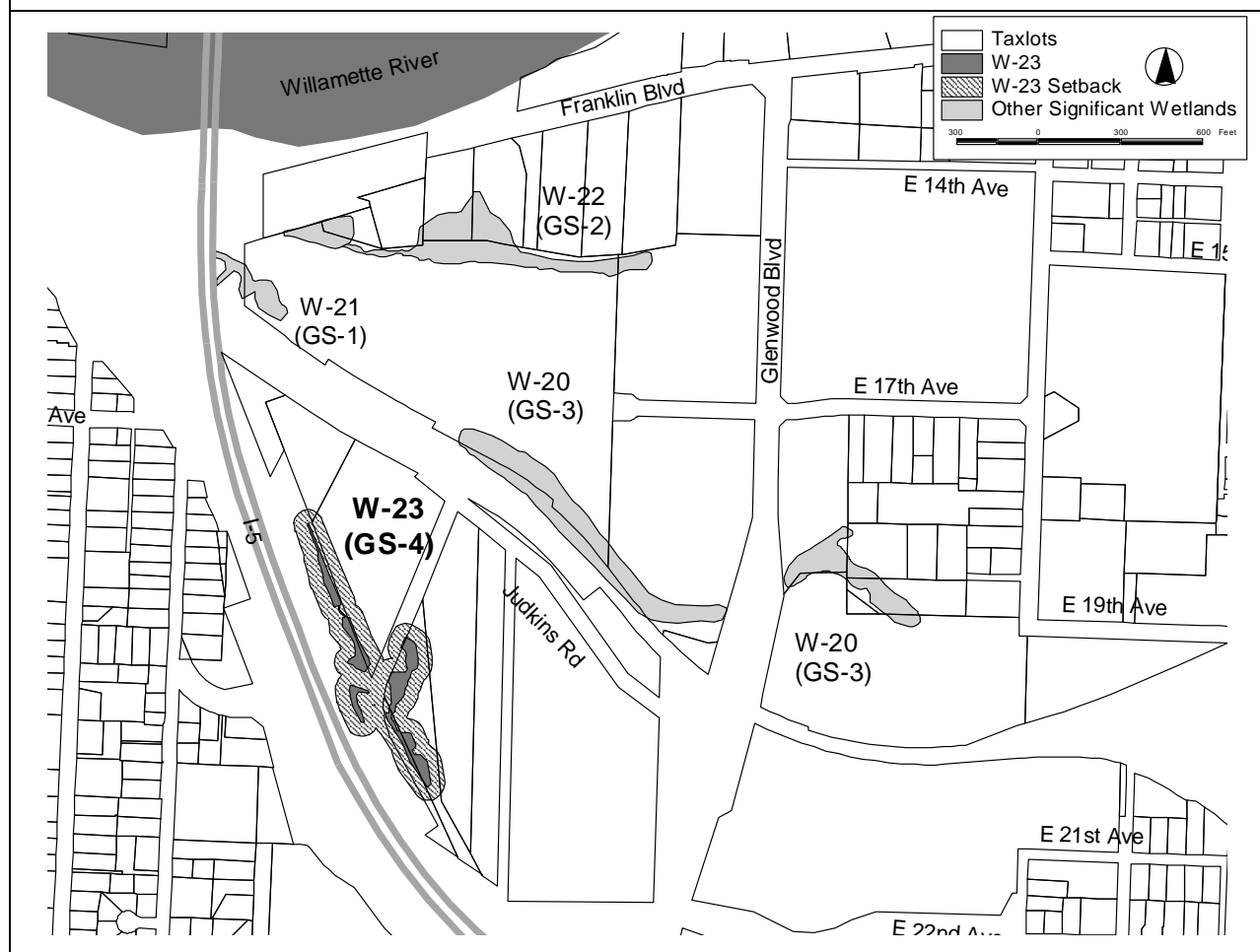
Site W-22 Zoning	Redevelopable	Vacant	Total Acres
LMI	.91	1.35	2.26
Total Acres	.91	1.35	2.26

The cumulative effect of fully protecting all commercial and industrial lands that are impacted by riparian or wetland resources could increase the need for UGB expansion to meet land needs.

A 50-foot development setback is already required under stormwater provisions of the Springfield Development Code, and thus the 2.26 acre impact of protecting W-22, including its setback, is not attributed to this report.

Site: W-23 (GS-4)	Acres: .87	OFWAM: Locally Significant	Associated Inventoried Riparian Resource?
	Cowardin Class: Palustrine Emergent (PEM) Herbaceous plants growing in standing water or saturated soils.	Wetland is within ¼ mile of DEQ 303 (d) listed water body Moderate Quality Wetlands	Yes: S-26 WHA Score: 17-57 High Quality Resource Site

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the wetland. Maintain an average 25-foot development setback from the wetland. The adjacent Riverview/Augusta Channel (S-26) is protected by a 50-foot development setback and site plan review standards described in Section 4.3-115 of the Springfield Development Code. Portions of this setback overlap with the recommended 25-foot setback for W-23. Any portion of W-23 not protected by the Riverview/Augusta Channel's 50-foot setback should be protected by a 25-foot setback under the provisions of SDC 4.3-117.



Description:

Wetland W-23 is .87 acres and classified as Palustrine Emergent (PEM) wetland. W-23 is a series of small PEM wetlands located within the ODOT ROW and on private property. The wetlands were delineated in 2007 for the I-5 bridge project (WD08-0140). The wetlands are located at the bottom of a steep slope. Hydrology from the wetlands flows into a channel that drains to the northwest into the Willamette River. The wetlands located in the ODOT ROW are mowed and maintained.

By state mandate, the Oregon Freshwater Wetland Assessment Methodology (OFWAM) is used to determine if a wetland is “locally significant” under Oregon law. W-23 fails all criteria for the significance test with the exception that portions of the wetland are within ¼ mile of a water body listed by DEQ as a water-quality limited water body, and the wetland has an impacted or degraded water quality function.

Dominant Wetland Vegetation

Trees/ Shrubs		Vines/ Herbs	
<i>Populus trichocarpa</i>	Black Cottonwood	<i>Mentha arvensis</i>	Wild mint
		<i>Biden sp.</i>	Begger’s tick.
		<i>Juncus effusus</i>	Soft Rush
		<i>Carex stipata</i>	Sawbeak Sedge
		<i>Bromus hordeaceus</i>	Soft Brome
		<i>Holcus Lanatus</i>	Common Velvet Grass
		<i>Plantago Lanceolata</i>	English Plantain
		<i>Festuca arundinacea</i>	Tall Fescue
		<i>Poa sp.</i>	Bluegrass species

Adjacent upland species: *Populus alba*, *Rubus discolor*, *Daucus carota*, *Cytisus scoparium*, *Vicia sp.*, *Festuca arundinacea*, *Taraxacum officinale*, *Trifolium pretense*

Soils

Soils—Mapped Series	Dixonville-Philomath-Hazelair Complex
Hydrologic Source	Groundwater

Wetland and Impact Area Summary

Wetland Acreage	.87
Impact Area Acreage	5.34
Combined Wetland and Impact Area	6.21
Vacant Acres within the Combined Area	2.05
Parcels Affected (Including Impact Area)	5
Combined Parcel Acreage	12.67

Conflicting Uses by Acre and Zoning District

SITE ID	LMI	TOTAL ACRES
W-23	.53	*.53
W-23 Impact Area	5.34	5.34
Total	5.87	5.87

*Portions of the wetland fall within right-of-way which has no zoning designation; thus this figure is less than that shown above for wetland acreage.

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LMI	TOTAL ACRES
W-23	.49	.49
W-23 Impact Area	1.56	1.56
Total	2.05	2.05

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in Section 4.3-115 of the Springfield Development Code? **Yes, in part. Portions of W-23 are not currently protected.**

W-23 is adjacent to, but a part of the Riverview/Augusta Channel (S-26). The Channel is a tributary to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and by a site plan review requirement.

The Glenwood Refinement Plan includes policies that give direction for environmental design. The Refinement Plan states, "Significant wetland areas in Glenwood shall be protected from encroachment and degradation in order to retain their important functions and values related to fish and wildlife habitat, flood control, sediment, and erosion control, water quality control, and ground water pollution control," (Policy 1, pg. 92, Environmental Element).

Site Specific ESEE Analysis for W-23

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-23 is rated as a "Moderate Quality Wetlands." The wetland's water quality and hydrologic control functions are impacted or degraded. The resource provides habitat for some species, but the OFWAM analysis concludes that it does not provide a diverse wildlife habitat. Fully

allowing conflicting uses would mean the loss of what little function and habitat that W-23 provides.

Social Consequences

W-23 is not aesthetically pleasing, nor is it appropriate for educational or recreational uses. The Willamalane Park and Recreation District Comprehensive Plan shows no anticipated park facilities or natural areas near the resource site. The OFWAM analysis noted that the site is not appropriate for recreational use. The wetland does not have any point of access. The site has some potential for enhancement which may make improve its wetland function.

Economic Consequences

Fully allowing conflicting uses would mean the loss of the water quality and hydrologic control functions of the resource. These functions could be mimicked using engineered facilities at a significant cost. Fully protecting the resource site would mean the loss of 1.56 acres of vacant industrial land within the combined wetland and impact area boundaries.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the wetland. Maintain an average 25-foot development setback from the wetland. The adjacent Riverview/Augusta Channel is protected by a 50-foot development setback and site plan review standards described in Section 4.3-115 of the Springfield Development Code. Portions of this setback overlap the recommended 25-foot setback for W-23. Any portion of W-23 not protected by the Riverview/Augusta Channel 50-foot setback should be protected by a 25-foot setback.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LMI	TOTAL ACRES
W-23	.49	.49
W-23 25-ft. Setback	.68	.68
Total	1.17	1.17

About .49 acres of W-23 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 2 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced.

A 25-foot setback would affect .68 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Section 4.3-115 of the Springfield Development Code.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Section 4.3-115.

Reduction in the Buildable Land Inventory:

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of commercial and industrial lands. The Springfield Residential Lands Study (RLS) that was also completed in 2009 identified a small surplus of residential lands. These inventories include some Glenwood sites and classified each as “Vacant,” or “Redevelopable.” These classifications are not the same used by the Lane County Assessor’s Office. These classifications stem from judgments made by ECONorthwest in collaboration with a steering committee that helped frame assumptions about what is redevelopable and vacant.

Protecting W-23 and its 50-foot setback area from future development effectively reduces the CIBL inventory by a total of 1.02 acres.

Impact of Recommended Protection on Commercial, Industrial and Residential Land Inventories

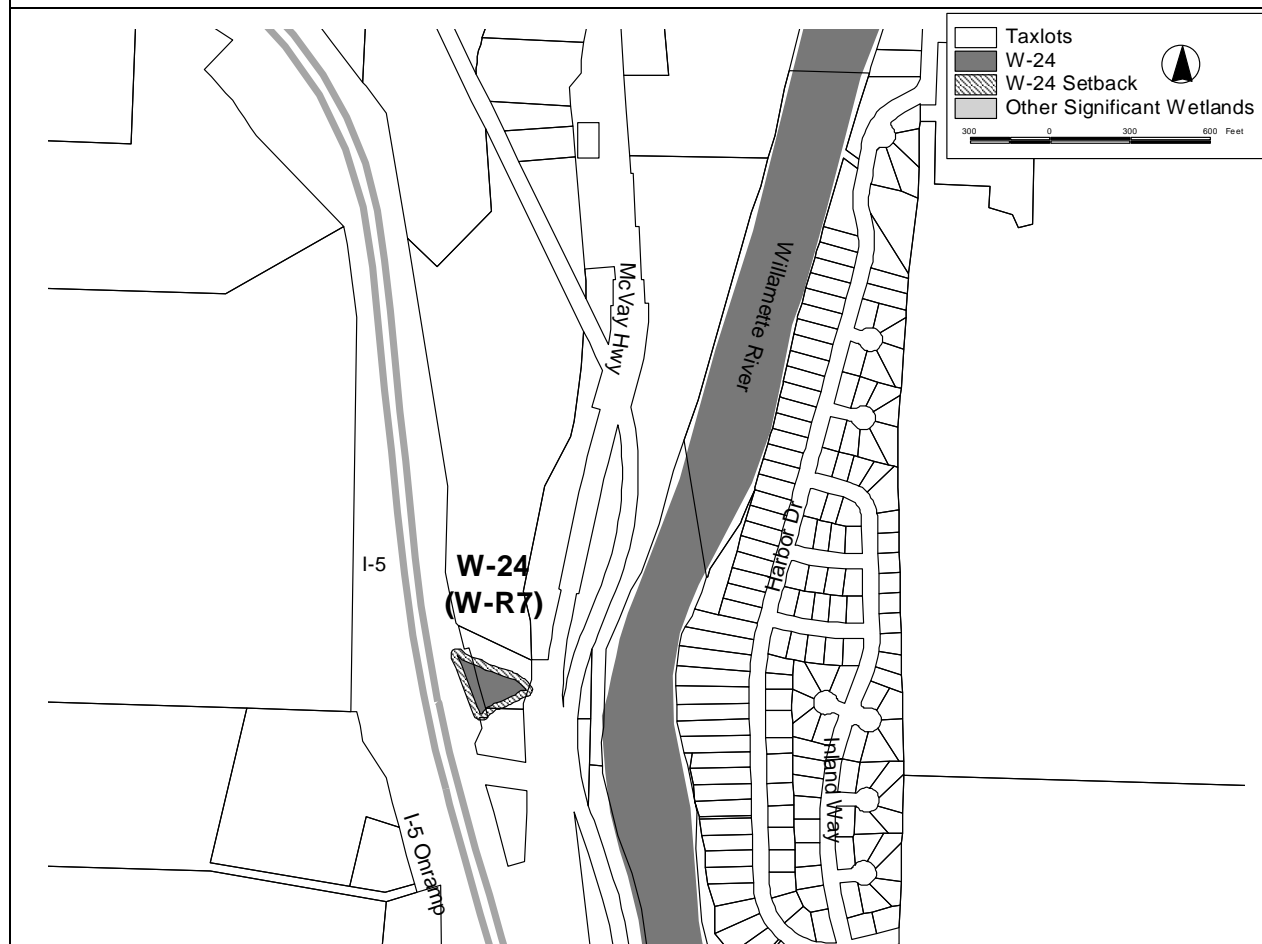
Site W-23 Zoning	Redevelopable	Vacant	Total Acres
LMI	.49	.53	1.02
Total Acres	.49	.53	1.02

The cumulative effect of fully protecting all commercial and industrial lands that are impacted by riparian or wetland resources could increase the need for UGB expansion to meet land needs.

A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 1.02 impact of protecting W-23 with the setback is not attributed to this report.

Site: W-24 (W-R7)	Acres: .51	OFWAM: Locally Significant Wetland is within ¼ mile of DEQ 303 (d) listed water body Medium Quality Wetlands	Associated Inventoried Riparian Resource? Yes: S-28 WHA Score: 61 High Quality Resource Site
	Cowardin Class: Palustrine Forested (PFO); Wetland with trees growing in standing water or saturated soils, or small wetlands entirely beneath an overhanging forest canopy.		

Goal 5 Recommendation: Limit conflicting uses that may impact the wetland. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.



Description:

W-24 is located at the bottom of surrounding steep slopes. There is a narrow intermittent drainage channel that flows through the middle of the wetland. This drainage continues east through a long culvert under McVay Hwy. and the railroad and out to the Willamette River. W-24 is located between I-5 and McVay Hwy. with residential land uses to the north and south.

Dominant Wetland Vegetation			
Trees/ Shrubs		Vines/ Herbs	
<i>Populus trichocarpa</i>	Black Cottonwood	<i>Phalaris arundinacea</i>	Reed Canary Grass
<i>Salix lasiandra</i>	Pacific Willow	<i>Oenanthe sarmentosa</i>	Water-Parsley
<i>Cornus stolonifera</i>	Red-Osier Dogwood	<i>Urtica dioica</i>	Stinging Nettles
		<i>Carex obnupta</i>	Slough Sedge
		<i>Equisetum arvense</i>	Field Horsetail

Adjacent upland species: *Acer macrophyllum*, *Rubus discolor*, *Festuca arundinacea*, *Daucus carota*, *Polystichum munitum*, *Dactylis glomerata*

Soils—Mapped Series	Dixonville-Philomath-Hazelair Complex
Hydrologic Source	Groundwater

Wetland and Impact Area Summary

Wetland Acreage	.51
Impact Area Acreage	1.69
Combined Wetland and Impact Area	2.20
Vacant Acres within the Combined Area	.86
Parcels Affected (Including Impact Area)	4
Combined Parcel Acreage	22.03

Conflicting Uses by Acre and Zoning District

SITE ID	LD	PL	TOTAL ACRES
W-24	.35	0	*.35
W-24 Impact Area	1.28	.41	1.69
Total	1.63	.41	2.04

*Portions of the wetland fall within right-of-way which has no zoning designation; thus this figure is less than that shown above for wetland acreage.

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LD	PL	TOTAL ACRES
W-24	0	0	0
W-24 Impact Area	.53	.33	.86
Total	.53	.33	.86

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in Section 4.3-115 of the Springfield Development Code? **No.**

The Glenwood Refinement Plan includes policies that give direction for environmental design. The Refinement Plan states, “Significant wetland areas in Glenwood shall be protected from encroachment and degradation in order to retain their important functions and values related to fish and wildlife habitat, flood control, sediment, and erosion control, water quality control, and ground water pollution control,” (Policy 1, pg. 92, Environmental Element).

Site Specific ESEE Analysis for W-24

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

W-24 is rated as a “Moderate Quality Wetlands.” The wetland’s water quality and hydrologic control functions are impacted or degraded. The resource provides habitat for some species, but the OFWAM analysis concludes that it does not provide a diverse wildlife habitat. Fully allowing conflicting uses would mean the loss of what little function and habitat that W-24 provides.

Social Consequences

W-24 is isolated and not easily accessible to the public. It is not appropriate for educational or recreational uses. The Willamalane Park and Recreation District Comprehensive Plan shows no anticipated park facilities or natural areas near the resource site. The site has moderate potential for enhancement which may make it more of a community amenity.

Economic Consequences

Fully allowing conflicting uses would mean the loss of the water quality and hydrologic control functions of the resource. These functions could be mimicked using engineered facilities at a significant cost. Fully protecting the resource site and its impact area would mean the loss of .86 acres of vacant residential land within the combined wetland and impact area boundaries.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the wetland. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LD	PI	TOTAL ACRES
W-24	0	0	0
W-24 25-ft. Setback	.02	0	.02
Total	.02	0	.02

About .02 acres of W-24 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 3 lots. Limiting conflicting uses would allow some development to occur within the wetland area where the developer could show how the essential functions of the wetland could be preserved or enhanced.

A 25-foot setback would affect .02 acres of vacant residential land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under SDC Section 4.3-117.

Employing low impact development practices within 150 feet of the wetland could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in SDC Section 4.3-115.

Reduction in the Buildable Land Inventory:

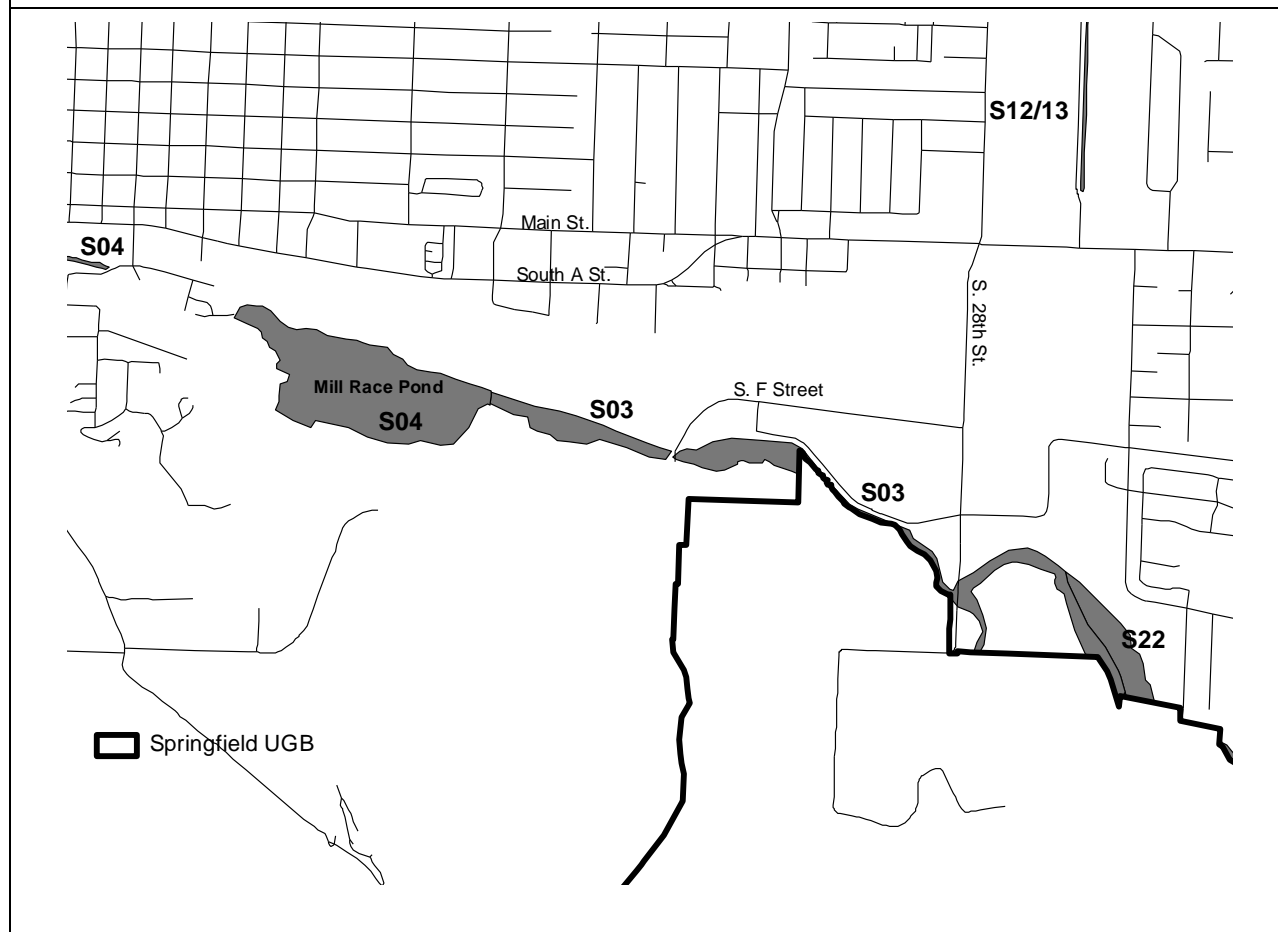
The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of commercial and industrial lands. The Springfield Residential Lands Study (RLS) that was also completed in 2009 identified a small surplus of residential lands. These inventories include some Glenwood sites and classified each as "Vacant," or "Redevelopable." These classifications are not the same used by the Lane County Assessor's Office. These classifications stem from judgments made by ECONorthwest in collaboration with a steering committee that helped frame assumptions about what is redevelopable and vacant.

Neither the CIBL nor the RLS showed W-24 or its setbacks as inventoried land. Protecting W-24 will not cause a reduction in those inventories.

9.2 Riparian Resource Sites

Site	Listed on Local Wetland Inventory?	Acres	WHA Score	Springfield Waterways Channel Assessment:
S03 Springfield Millrace A, Natural	Locally Significant Wetlands (W19) High Quality Wetlands	24.34	61-62 High Quality Resource Site	Not Assessed

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. The Springfield Millrace is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.



Description:

This portion of the Millrace is a part of the same system as Site S04. Density, diversity, and health of riparian vegetation and adjacent land use give this section a higher wildlife habitat value. Black cottonwood, willow, hawthorne, bigleaf maple, with an understory of snowberry and rose are common vegetation along the Millrace. The Millrace functions as a wildlife travel

corridor, linking upland and wetland sites in Springfield. It also provides water for wildlife utilizing adjacent upland areas with no water.

Resource and Impact Area Summary

Resource Acreage:	25.15
Impact Area Acreage:	44.09
Combined Resource and Impact Area:	69.24
Vacant Acres within the Combined Area:	27.27
Number of Parcels Affected:	22
Combined Parcel Acreage:	134.66

Conflicting Uses by Acre by Zoning District

SITE ID	HI	LDR	MDR	PLO	QM	TOTAL ACRES
S-03	14.81	4.11	5.34	.08	0	24.34
S-03 Impact Area	25.86	7.05	12.69	1.14	1.26	48.00
Total	40.67	11.16	18.03	1.22	1.26	72.34

Conflicting Uses by Vacant Acre by Zoning District

SITE ID	HI	LDR	MDR	PLO	QM	TOTAL ACRES
S-03	9.33	2.04	0	.08	0	11.45
S-03 Impact Area	9.76	3.12	0	1.14	0	14.02
Total	19.09	5.16	0	1.22	0	25.47

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

S-03 includes the Springfield Millrace. The Millrace is a tributary to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for S-03

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

S-03 includes the rural portion of the Springfield Millrace. The millrace also includes S-04, the portion of the millrace that flows through a developed industrial area and includes a large abandoned log pond. S-03 is listed as a locally significant wetland on the Springfield wetland inventory (W19). The hydrologic function of the watercourse is intact, although water flow is intermittent during the summer when the water level at the Willamette River inlet drops. The feature serves as a receiving stream for much of the storm water runoff from neighborhoods in south Springfield. Efforts are being made by the City to purchase land adjacent to the millrace as part of a long term effort to restore and enhance the millrace as wetland and riparian habitat. The US Army Corps of Engineers is also involved and may invest in future restoration efforts.

The 61-62 WHA score reflects the high habitat value that already exists. Fully allowing conflicting uses would mean the loss of a high quality wetland and a high quality resource.

Social Consequences

Willamalane Park and Recreation District's Comprehensive Plan shows two planned natural area parks and a bike path connecting Clearwater and Island Parks. One of the two natural areas is located at Stuart Agnes Middle School, where there is public access to the resource site. The bike path along the length of the Millrace is part of the Springfield Bike Plan that was adopted in 1998. Fully allowing conflicting uses could degrade the recreational and educational potential of the parks and bike path.

Economic Consequences

Fully protecting the rural element of the Millrace would affect about 11.45 acres of vacant industrial and residential land within the impact area adjacent to the watercourse. An additional 14.02 vacant acres are listed within the resource itself. Most of the watercourse itself is publicly owned. Replacement of the storm water conveyance and flood mitigation functions of the millrace would be costly.

Limiting conflicting uses near the Millrace would preserve hydrologic functions that exist today and would support efforts to restore and enhance the stream for wildlife habitat and for recreational and educational uses.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. The Springfield Millrace is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	HI	LDR	PLO	TOTAL ACRES
S-03	9.33	2.04	.08	11.45
S-03 50-ft. Setback	3.79	1.00	.51	5.30
Total	13.12	3.04	.59	16.75

About 11.45 acres of S-03 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 10 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the resource area could be preserved or enhanced. A 50-foot development setback is already required for the resource under Article 31. No additional setback is proposed.

A 50-foot setback would affect 5.30 acres of vacant residential, industrial and public land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

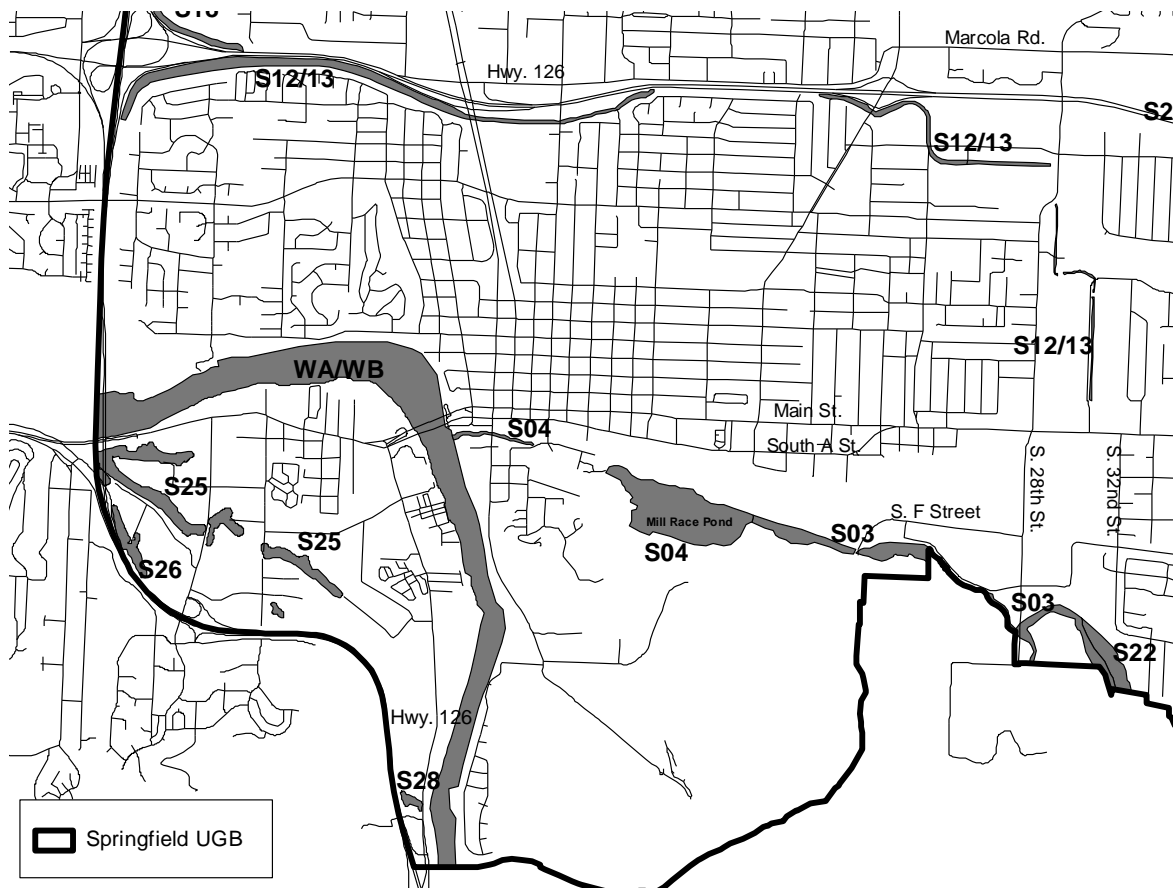
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

S-03 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 5.30 acre impact of the setback is not attributed to this report.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S04 Springfield Millrace B, Industrial, Mill Pond	Yes	42.51	40-41 Moderate Quality Resource Site	Not Assessed

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. The Springfield Millrace is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.



Description:

The Millrace runs from the Willamette River to the Mill Pond adjacent to the Booth Kelly site in Springfield. The upper stretches of the Millrace (Site S03) provide higher value wildlife habitat than the stretch within Site S04. This lower stretch of the Mill Race has a thin riparian strip with

industrial and agricultural uses immediately adjacent. Noise, activity, and runoff from adjacent activities may adversely impact wildlife use of the Millrace. Water quality should be monitored.

Resource and Impact Area Summary

Resource Acreage:	42.51
Impact Area Acreage:	34.28
Combined Resource and Impact Area:	76.79
Vacant Acres within the Combined Area:	6.38
Number of Parcels Affected:	33
Combined Parcel Acreage:	485.48

Conflicting Uses by Acre and Zoning District

SITE ID	BK	CC	HI	LD	LM	PL	QM	TOTAL ACRES
S-04	29.73	0	11.13	.63	1.02	0	0	42.51
S-04 Impact Area	10.46	.44	13.36	2.0	4.92	.64	2.46	34.28
Total	40.19	.44	24.49	2.63	5.94	.64	2.46	76.79

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	BK	CC	HI	LD	LM	PL	QM	TOTAL ACRES
S-04	.21			.63	0	0	0	.84
S-04 Impact Area	1.41	.19	.85	2.0	.66	.43	0	5.54
Total	1.62	.19	.85	2.63	.66	.43	0	6.38

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

S-04 is classified as a tributary to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for S-04

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

S-04 includes the industrial portion of the Springfield Millrace and a large abandoned log pond. The millrace also includes S-03, the portion of the millrace that flows through a largely undeveloped rural area in south Springfield. The mill pond portion of S-04 is listed as part of a locally significant wetland on the Springfield wetland inventory (W19). The hydrologic function of the watercourse is intact as a whole, although water flow is intermittent during the summer when the water level at the Willamette River inlet drops. The feature serves as a receiving stream for much of the storm water runoff from neighborhoods in south Springfield. Efforts are being made by the City to purchase land adjacent to the millrace as part of a long term effort to restore and enhance the millrace as wetland and riparian habitat. The US Army Corps of Engineers is also involved and may invest in future restoration efforts.

The 40-41 WHA score reflects the lower habitat value of this portion of the watercourse, compared to S-03. Fully allowing conflicting uses would mean the loss of the hydrologic and habitat functions of the watercourse.

Social Consequences

Willamalane Park and Recreation District's Comprehensive Plan shows two planned natural area parks and a bike path connecting Clearwater and Island Parks. One of the two natural areas is located at the mill pond, within S04. The bike path along the length of the Millrace is part of the Springfield Bike Plan that was adopted in 1998. Fully allowing conflicting uses could degrade the recreational and educational potential of the parks and bike path.

The Springfield Station Specific Area Plan cites the value of S-04 as a potential natural amenity for the historic Downtown, if the resource was restored and enhanced. Limiting conflicting uses and promoting restoration of S-04 could enhance the livability of the Downtown.

Economic Consequences

Fully protecting the rural element of the Millrace would affect about 5.54 acres of vacant industrial and tract and within the impact area adjacent to the watercourse. An additional .84 vacant acres are listed within the resource itself. Most of the watercourse is publicly owned. Replacement of the storm water conveyance and flood mitigation functions of the millrace would be costly.

Limiting conflicting uses near the Millrace would preserve hydrologic functions that exist today and would support efforts to restore and enhance the stream for recreational and Downtown economic recovery purposes.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. The Springfield Millrace is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	BK	LDR	LMI	PL	TOTAL ACRES
S-04	.21	.63	0	0	.84
S-04 50-ft. Setback	.82	.56	.16	.09	1.63
Total	1.03	1.19	.16	.09	2.47

About .84 acres of S-04 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 6 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the riparian corridor could be preserved or enhanced. A 50-foot development setback is already required for the riparian area under Article 31. No additional setback is proposed.

A 50-foot setback would affect 1.63 acres of vacant residential, industrial and public land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

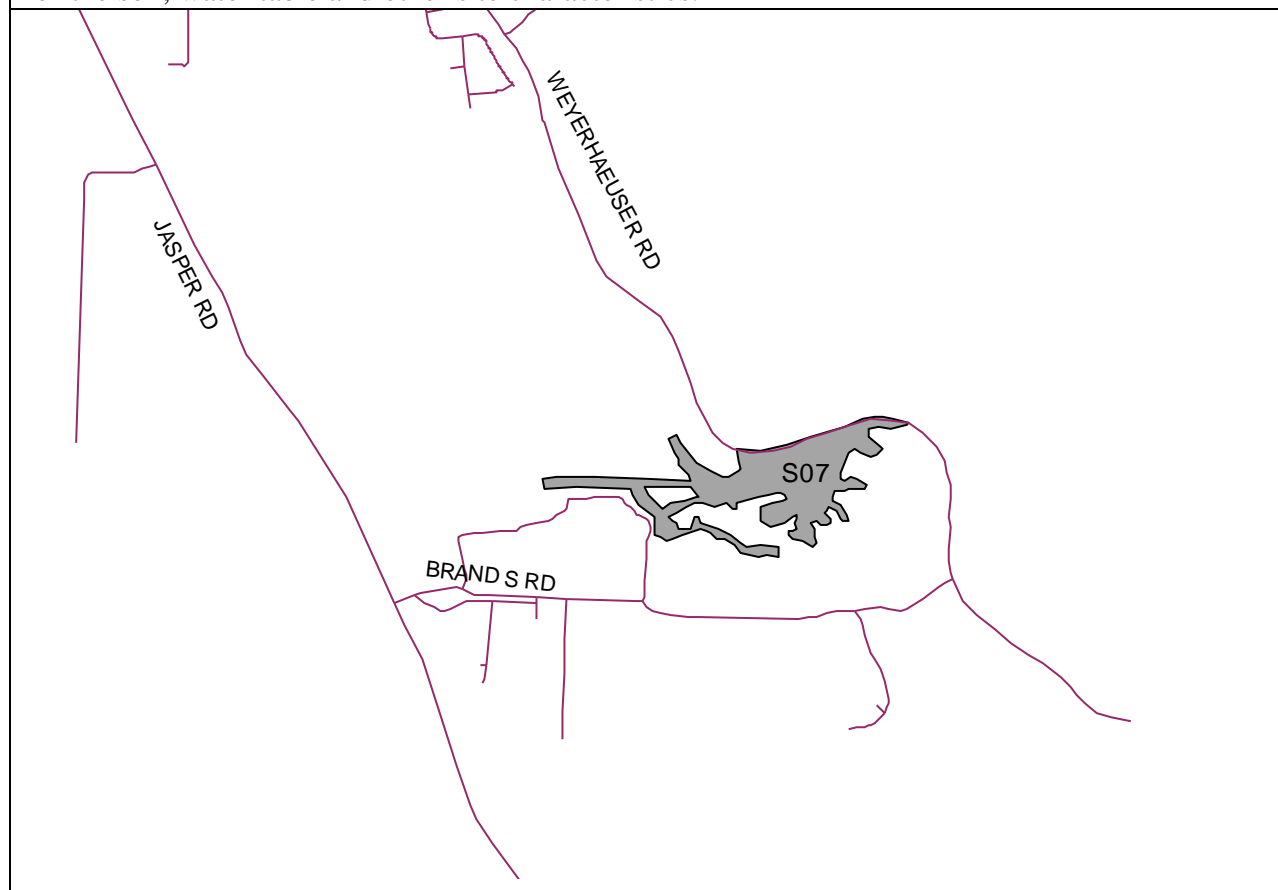
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

S-04 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 1.63 acre impact of the setback is not attributed to this report.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S07 Brand S/ Natron	Locally Significant Wetlands (W18a) High Quality Wetlands	23.66	34 Moderate Quality Resource Site	Not Assessed

Goal 5 Recommendation: Limit conflicting uses that may impact the riparian resource and associated wetland. Maintain a 25-foot development setback from the wetland. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.



Description:

Site S07 in east Springfield is a series of irrigation ponds and slough channels. The entire site has been altered and is highly disturbed. Riparian vegetation along the ponds where present is diverse and dense. The slough channels are vegetated with rush, sedge, spreading bentgrass, cattail, and Himalayan blackberry. The open water and adjacent riparian vegetation provide habitat for waterfowl, shorebirds, and some songbird species.

Resource and Impact Area Summary

Resource Acreage:	23.66
Impact Area Acreage:	33.10
Combined Resource and Impact Area:	56.76
Vacant Acres within the Combined Area:	22.93
Number of Parcels Affected:	6
Combined Parcel Acreage:	260.05

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	LMI	SHI	TOTAL ACRES
S-07	5.88	16.3	1.48	23.66
S-07 Impact Area	9.51	19.63	3.96	33.1
Total	15.39	35.93	5.44	56.76

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	LMI	SHI	TOTAL ACRES
S-07	0	10.89	0	10.89
S-07 Impact Area	0	12.04	0	12.04
Total	0	22.93	0	22.93

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**.

Site Specific ESEE Analysis for S-07

Environmental Consequences

With a WHA score of 41, S-07 is ranked as a moderate quality resource site. The site has been highly disturbed by agricultural and industrial uses. Part of S-07 overlaps with a large wetland complex (W18a) that is considered a high quality wetland. S-07 serves a hydrologic control function, slowing and storing runoff from the Thurston Hills to the north.

Fully allowing conflicting uses would mean the loss of almost 24 acres of riparian and wetland resource land as well as the loss of S-07's hydrologic functions. Limiting conflicting uses and encouraging restoration could improve the habitat value of the site while making the resource a more valuable natural amenity.

Social Consequences

The Willamalane Park and Recreation District's Comprehensive Plan shows a proposed natural area park in the vicinity of the resource. Fully allowing conflicting uses could mean the loss of this future recreational resource.

Economic Consequences

Fully protecting S-07 would mean the loss of 12.04 acres of vacant industrial land within the impact area and an additional 10.89 acres of vacant land within the resource site itself. Completion of the Jasper Road Extension will significantly increase the value of the land by providing more direct transportation connections to Hwy 126/I-105 and I-5.

The Natron corridor that will be opened to development with the completion of the Jasper Road Extension includes almost 800 acres of undeveloped land that is within the existing urban growth boundary.

Limiting conflicting uses could preserve or even enhance the resource functions, and provide a complimenting amenity for development.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the riparian resource and associated wetland. Maintain a 25-foot development setback from the wetland. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LMI	TOTAL ACRES
S-07	10.89	10.89
S-07 25-ft. Setback	2.05	2.05
Total	12.94	12.94

About 10.89 acres of S-07 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes a portion of 1 lot. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the resource area could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect 2.05 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space

that is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

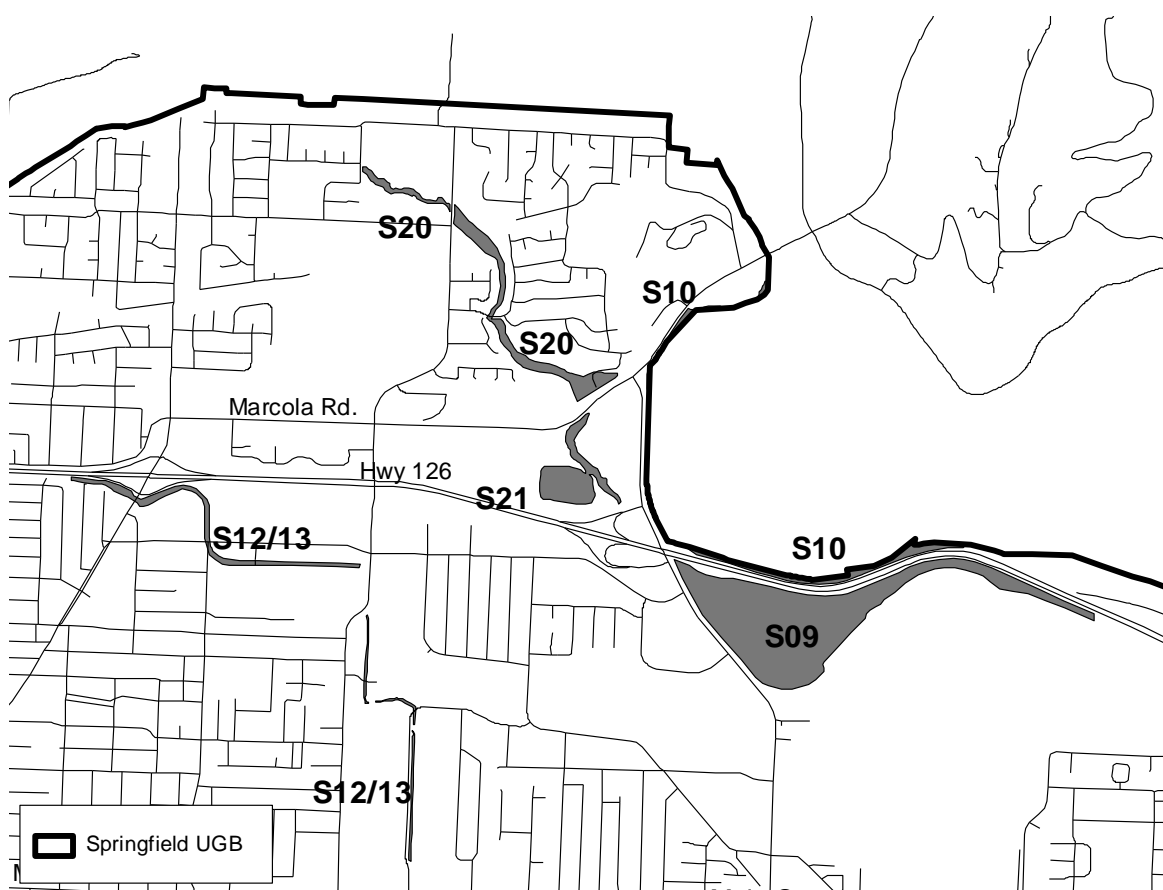
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

S-07 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about 2.05 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S09 Weyerhaeuser B	Locally Significant Wetlands (M33a) High Quality Wetlands	62.11	50 High Quality Resource Site	Not Assessed

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. The Keizer Slough is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.



Description

This site owned by Weyerhaeuser Company and is located south of Highway 126 near the Weyerhaeuser industrial site at 42nd Street and Hwy 126. It is connected to the McKenzie River via slough channels that pass beneath Highway 126. Two ponds on the site are former borrow pits. Vegetation includes overstory of bigleaf maple and black cottonwood and an understory of willow, red alder, and snowberry.

The site includes portions of Keizer Slough which is listed as a significant wetland (M33a) on the local wetland inventory. The site scores high on diversity and quality of the water features on the site.

Resource and Impact Area Summary

Resource Acreage:	62.11
Impact Area Acreage:	21.27
Combined Resource and Impact Area:	83.38
Vacant Acres within the Combined Area:	68.07
Number of Parcels Affected:	4.00
Combined Parcel Acreage:	118.32

Conflicting Uses by Acre and Zoning District

SITE ID	HI	TOTAL ACRES
S-09	62.11	62.11
S-09 Impact Area	21.25	21.25
Total	83.36	83.36

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	HI	TOTAL ACRES
S-09	56.15	56.15
S-09 Impact Area	11.9	11.9
Total	68.05	68.05

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

S-09 is associated with the Keizer Slough. The Slough is a tributary to a water quality limited watercourse (McKenzie River) and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for S-09

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

Water and adjacent riparian vegetation provide food, cover and nesting areas for waterfowl, shore birds, amphibians and fish species. Riparian shrub/forest provides habitat for passerine (perching) and raptor bird species. The hydrologic control function of the slough and ponds is intact. Fully allowing conflicting uses would mean the loss of these habitat and riparian functions.

Social Consequences

There is a multi-use path adjacent to S09 that provides public viewing of the resource site, but no access. Fully allowing conflicting uses of the site would mean the loss of the site as a public amenity that provides passive recreation and educational values.

Economic Consequences

The ponds and slough serve hydrologic control and conveyance functions. These functions could be mimicked by engineered facilities for a cost. Fully protecting the site would mean the loss of 68.05 acres of vacant industrial land. Limiting conflicting uses would allow some continued industrial use (e.g. water cooling) without the loss of S09's habitat and hydrologic functions.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse and ponds. The Keizer Slough is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	HI	TOTAL ACRES
S-09	56.15	56.15
S-09 50-ft. Setback	5.14	5.14
Total	61.29	61.29

About 56.15 acres of S-09 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 2 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the resource area under Article 31. No additional setback is proposed.

A 50-foot setback would affect 5.14 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

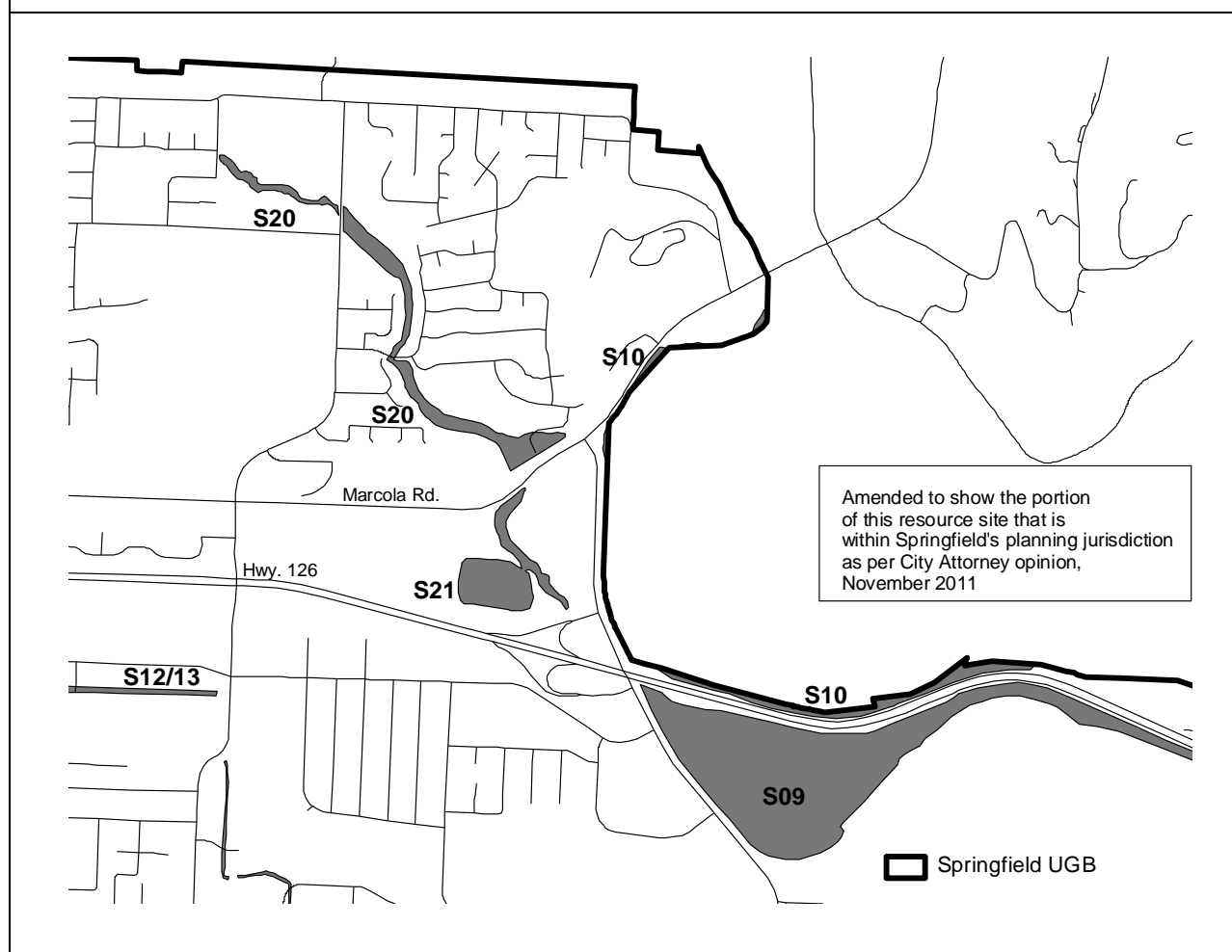
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

S-09 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 5.14 acre impact of the setback is not attributed to this report.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S10 Weyerhaeuser A McKenzie Oxbow	No	1.11 within the UGB	70 High Quality Resource Site	Not Assessed

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. Implement the provisions of the McKenzie Oxbow Natural Area Master Plan. The Marcola Oxbow is part of S10 and is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.



Description:

The site is north of Highway 126 near Weyerhaeuser. The site has a large forested area with excellent structural diversity, abundant sources of food, water and cover, and strong connections with other wildlife habitat sites. Vegetation includes black cottonwood, willow, snowberry,

sedge, rush, and cattail. The site is a major wildlife corridor and provides vital components of fish habitat for fish.

Resource and Impact Area Summary

Resource Acreage:	1.11*
Impact Area Acreage:	8.3*
Combined Resource and Impact Area:	9.41
Vacant Acres within the Combined Area:	1.14
Number of Parcels Affected:	12
Combined Parcel Acreage:	159.93

*The small acreage shown reflects the small amount of S10 that is within the Springfield UGB. The majority of S10 is outside the Urban Growth Boundary, and as such, is outside of the planning jurisdiction of the City. Virtually the entire site was donated to the City of Springfield by Weyerhaeuser Company.

Conflicting Uses by Acre and Zoning District

SITE ID	HI	LDR	PLO	TOTAL ACRES
S-10	.9	0	.21	1.11
S-10 Impact Area	4.76	.77	2.77	8.3
Total	5.66	.77	2.98	9.41

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	HI	LDR	PLO	TOTAL ACRES
S-10	.02	0	.04	.06
S-10 Impact Area	.02	0	1.06	1.08
Total	.04	0	1.1	1.14

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

S-10 includes the McKenzie River, a water-quality limited water course with a flow rate of more than 1000 cubic feet per minute. As such, the McKenzie is protected by a 75-foot setback and a site plan review requirement. S-10 also includes the Marcola Oxbow Ditch. The ditch is a tributary to a water quality limited watercourse (McKenzie River) and is protected by a 50-foot setback and a site plan review requirement. Much of the site is outside of the Urban Growth Boundary and thus outside of the jurisdiction of the City of Springfield.

Site Specific ESEE Analysis for S-10

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

S10 is rated by the WHA as one of the highest quality resource sites in the Eugene-Springfield area. Large portions of S10 are owned by the City of Springfield. In 2001, the McKenzie Oxbow Natural Area Master Plan was prepared and adopted to future development of the site for passive recreational and educational uses and supported its continuing role as a well field and wetland mitigation site. Fully allowing conflicting uses mean the loss of one of Springfield's most highly rated natural resource site. Fully protecting the site could mean the loss of public access and perhaps the loss of an important public well field.

Social Consequences

The Willamalane Parks and Recreation Comprehensive Plan shows this area to be a proposed natural area park. The McKenzie Oxbow Master Plan has designated the area for public recreational and educational uses.

Economic Consequences

The site is a productive well field, provides storm water management and has been used as a site for wetland mitigation in the past. Allowing conflicting uses to degrade or displace these functions would be costly.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses. Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. Implement the provisions of the McKenzie Oxbow natural Area Master Plan. Allow for the development of recreational and educational facilities. The well field and storm water facilities should be maintained and allowed to expand as needed. The Marcola Oxbow part of S-10 and is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	HI	PLO	TOTAL ACRES
S-10	.02	.04	.06
S-10 50-ft. Setback (Marcola Oxbow Ditch)		.33	.33
Total	.02	.37	.39
S-10	0	0	0
S-10 75-ft. Setback (McKenzie River)	0	0	0
Total	0	0	0
Grand Total	.02	.37	.39

Site S-10 includes the McKenzie River. About 1.14 acres of S-10 is classified as vacant by the Lane County Assessor's Office. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the wetland could be preserved or enhanced. A 50-foot development setback is already required for the wetland under Article 31.240. No additional setback is proposed.

A 50-foot setback would affect .39 acres of vacant industrial and public land. The affect of the setback on buildable land could be reduced by aligning development such that required stormwater detention facilities are within the setback.

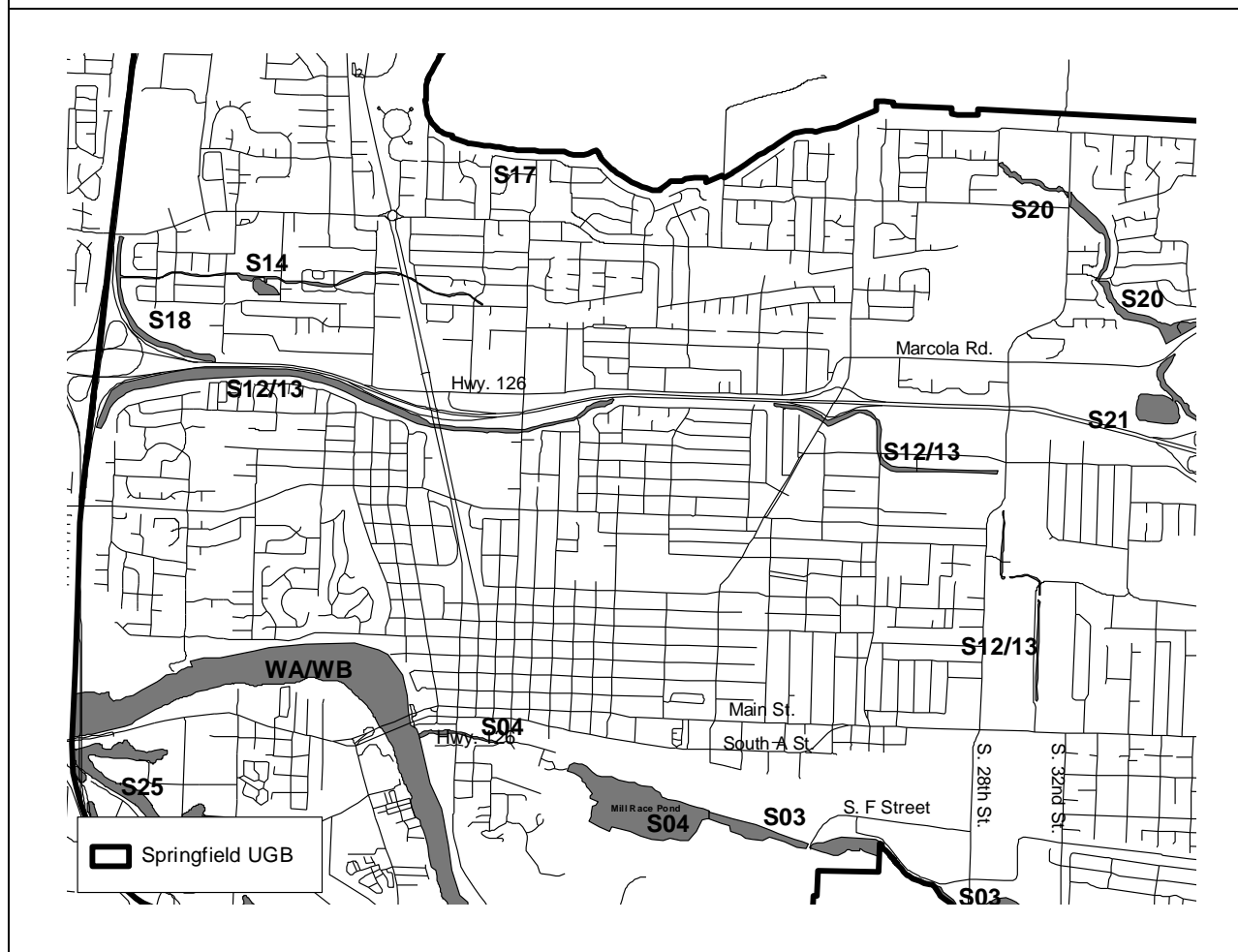
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The wetland, S-10 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 5.30 acre impact of the setback is not attributed to this report.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S12/13 Q Street Ditch	Yes: (M25)	13.64	45 (Trees) High Quality Resource Site 36 (Treeless) Moderate Quality	Q Street Floodway 5.8 (Poor)

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. The Q Street Ditch is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.



Description:

The Q Street ditch flows from 28th and Main in Springfield northward to I-105 and then flows westerly, parallel to I-105, under I-5, across to Alton Baker Park, where it joins the Canoe Canal. Much of the Q Street Ditch follows an historic drainage pattern that ultimately drained into the Willamette River, near Goodpasture Island. Portions of the ditch are riprapped and culverted (Site S13). Portions within this site have a thin riparian strip. The vegetation along the water's

edge and the bank provides some food, cover, and escape for some songbird, waterfowl, reptile, and small mammal species.

Additional information from the *Inventory and Channel Assessment for Springfield Waterways*

Q Street Floodway

Riparian Profile Details

- Plant community of mostly grass/field then mixed and hardwood. One each that is conifer, dominated by invasive specie and brush/shrub/scrub.
- Dominant invasive plant species: *Phalaris arundinacea* (Reed Canary-grass) and *Rubus armeniacus* (Armenian Blackberry).
- Co-dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry) and *Dipsacus fullonum* (Teasel).
- Invasive plant species listed as present: *Dipsacus fullonum* (Teasel), *Solanum dulcamara* (Nightshade), *Phalaris arundinacea* (Reed Canary-grass), *Festuca arundinacea* (Tall Fescue), *Rubus armeniacus* (Armenian Blackberry), *Cytisus scoparius* (Scotch Broom), *Mentha pulegium* (Pennyroyal), and *Holcus lanatus* (Velvet Grass).
- Others invasive plant species observed in the system: *Convolvulus sp.* (Morning Glory/Bindweed), *Phalaris aquatica* (Harding grass), *Hedera helix* (English Ivy), and *Rubus laciniatus* (Evergreen Blackberry).
- Nutria and bullfrogs were recorded as invasive animals/amphibian observed.
- Excessive tunneling, undercutting of banks, eating of vegetation to the point of bare banks were recorded as damage by invasive animals/amphibian.
- Great blue heron, ducks, Belted Kingfisher, small minnows, Common Yellow Throat, Raccoons, Mallards and Lazuli Bunting were recorded as wildlife observed.
- Nutria scat and nutria burrows were recorded as wildlife evidence observed.
- *Epilobium densiflorum* (Dense spike-primrose), *Juncus effuses* (Common rush), and *Myosotis laxa* (Small-flowered forget-me-not) were recorded for seed collection.
- Riparian buffer enhancement, neighborhood education, and culvert retrofit/replacement were recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding each health rating for each reach together then dividing it by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	1.7
Water Appearance	7.5
Nutrient Enrichment	5.8

Bank Stability	7.7
Canopy Density/Cover	2.6
Invasive Damage – P	3.8
Invasive Damage – A/A	7.3
Waste Presence	8.6
Barriers to Fish (SBW)	8.2
Insect/Invert Habitat (SBW)	7.3
In-stream Fish Cover (SBW)	3.3
Average Overall Health Rating	5.8 = Poor

Resource and Impact Area Summary

Resource Acreage:	13.64
Impact Area Acreage:	87.16
Combined Resource and Impact Area:	100.8
Vacant Acres within the Combined Area:	20.69
Number of Parcels Affected:	202
Combined Parcel Acreage:	271.29

Conflicting Uses by Acre and Zoning District

SITE ID	CC	HDR	HI	LDR	LMI	MDR	MRC	PL	TOTAL ACRES
S-12/13	0	1.18	0	.74	.87	1.77	5.6	3.48	13.64
S-12/13 Impact Area	.29	5.64	2.28	16.81	13.83	13.28	22.58	12.45	87.16
Total	.29	6.82	2.28	17.55	14.7	15.05	28.18	15.93	100.8

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	CC	HDR	HI	LDR	LMI	MDR	MRC	PL	TOTAL ACRES
S-12/13	0	0	0	0	.19	1.2	0	.08	1.47
S-12/13 Impact Area	0	0	0	1.3	7.37	8.24	1.91	.4	19.22
Total	0	0	0	13	7.56	9.44	1.91	.48	20.69

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

S12/13 is associated with the Q Street Floodway. The Floodway is a tributary to a water quality limited water course (Willamette River) and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for S-12/13

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

The portions of S12/13 that are lined by trees are rated as high quality resource areas by the WHA. Those sections of the watercourse that are without trees score are of moderate value. The most significant habitat function of the sparsely vegetated ditch is as a wildlife travel corridor linking some upland and wetland sites.

S12/13's water quality and hydrologic control functions are intact. The fish habitat function is degraded.

Although S12/13 provides limited wildlife habitat value compared to high scoring resource sites, it has significant potential for enhancement. The site also has potential to provide recreational and educational uses.

Fully allowing conflicting uses would mean the loss of the water quality and hydrologic control functions provided by the resource. These could be mimicked by engineered facilities, but at a significant cost. The loss of the wildlife travel corridor would be lost.

Social Consequences

Large segments of S12/13 are in public ownership. The segments allow public access to the resource for recreational and educational uses. Multi-use paths along the resource could provide both a recreational and alternative transportation opportunity. Fully allowing conflicting uses would mean the loss of current resource functions and would negate future recreational opportunities. Limiting conflicting uses could allow development in the vicinity of the resource while preserving the majority of the resource function.

Economic Consequences

S12/13 is a very important storm water management facility. Fully allowing conflicting uses would require the construction of a replacement facility at a significant cost. Fully protecting the resource would mean the loss of 20.69 vacant acres within the combined resource and impact area that are zoned for residential, commercial and industrial uses.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. The Springfield Millrace is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	LMI	MDR	MRC	PLO	TOTAL ACRES
S-12/13	0	.19	1.2	0	.08	1.47
S-12/13 50-ft. Setback	.17	1.88	2.73	.24	.13	5.15
Total	.17	2.07	3.93	.24	.21	6.62

About 1.47 acres of S-12/13 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 25 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the riparian corridor could be preserved or enhanced. A 50-foot development setback is already required for the riparian area under Article. No additional setback is proposed.

A 50-foot setback would affect 5.15 acres of vacant residential, industrial and public land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

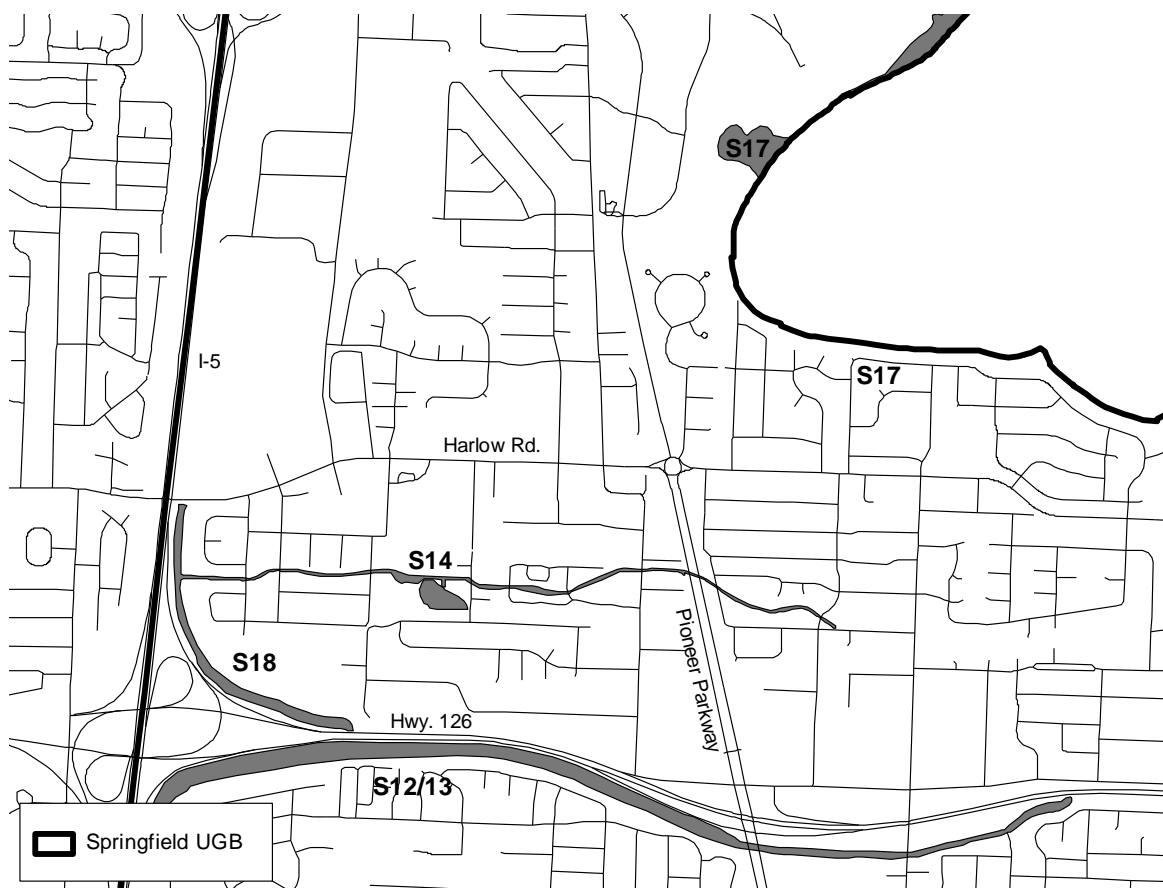
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

S-12/13 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 5.15 acre impact of the setback is not attributed to this report.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S14 Guy Lee	Locally Significant Wetlands (M26) Moderate Quality Wetlands	2.14	35 Moderate Quality Resource Site	Not Assessed

Goal 5 Recommendation: Limit conflicting uses that may impact the resource. Maintain a 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.



Description:

Guy Lee is a small Springfield park adjacent to Guy Lee School. It is surrounded on three sides by residential development and the school to the north.

The site is primarily a disturbed open grassland and has a small remnant riparian strip within a lower swale area. The site is adjacent to a drainage channel (S18) and is surrounded by a grass lawn. Water is present during portions of the growing season. Oregon ash and willow are the

dominant overstory vegetation with an understory of snowberry and Himalayan blackberry. This small remnant forested area provides habitat for some songbird and small mammal species; however, low interspersed value may limit wildlife use. Wildlife use of the area is greatly limited by the surrounding development.

Resource and Impact Area Summary

Resource Acreage:	2.14
Impact Area Acreage:	5.39
Combined Resource and Impact Area:	7.53
Vacant Acres within the Combined Area:	4.81
Number of Parcels Affected:	15
Combined Parcel Acreage:	14.69

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
S-14	.76	1.38	2.14
S-14 Impact Area	3.05	2.34	5.39
Total	3.81	3.72	7.53

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
S-14	.76	1.38	2.14
S-14 Impact Area	1.29	1.38	2.67
Total	2.05	2.76	4.81

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for S-14

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

While the site is a moderate quality resource site and wetlands, the site provides diverse wildlife habitat. Fully allowing conflicting uses would mean the loss of this habitat function. Limiting conflicting uses could preserve the habitat while allowing continued public use and access.

Social Consequences

The location of the site near the school provides both recreational and educational opportunities. The site is shown on the Willamalane Parks and Recreation District Comprehensive Plan as a proposed School/Park project. The site is aesthetically pleasing. Fully allowing conflicting uses would mean the loss of these resource values.

Economic Consequences

Fully protecting S-14 would affect 4.81 vacant acres of combined resource and impact area acreage that is zoned for residential and public use. About 2.76 acres of the vacant land is in public ownership by School District 19. About 2.05 acres of vacant residential acreage falls within the combined resource and impact area acreage.

Limiting conflicting uses could preserve the public uses of the site while allowing private development to occur.

Energy Consequences

None of note.

Recommended Program for Protection

The educational and aesthetic value of the site warrants some protection. The site has enhancement and restoration potential. The channel could be widened to allow a wetland marsh to develop. Human intrusion into the ash grove should be managed to limit the damage that foot traffic and litter has caused to plant and animal life. Construction of a boardwalk and educational and interpretive signs could help address these problems.

Limit conflicting uses that may impact the wetland. Maintain an average 25-foot development setback from the wetland. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
S-14	.76	1.38	2.14
S-14 25-ft. Setback	.23	.33	.56
Total	.99	1.71	2.70

About 2.14 acres of S-14 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes a portion of 2 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the

essential functions of the resource area could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect .23 acres of vacant residential land. An additional .33 acres of public land and open space are also listed as vacant. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

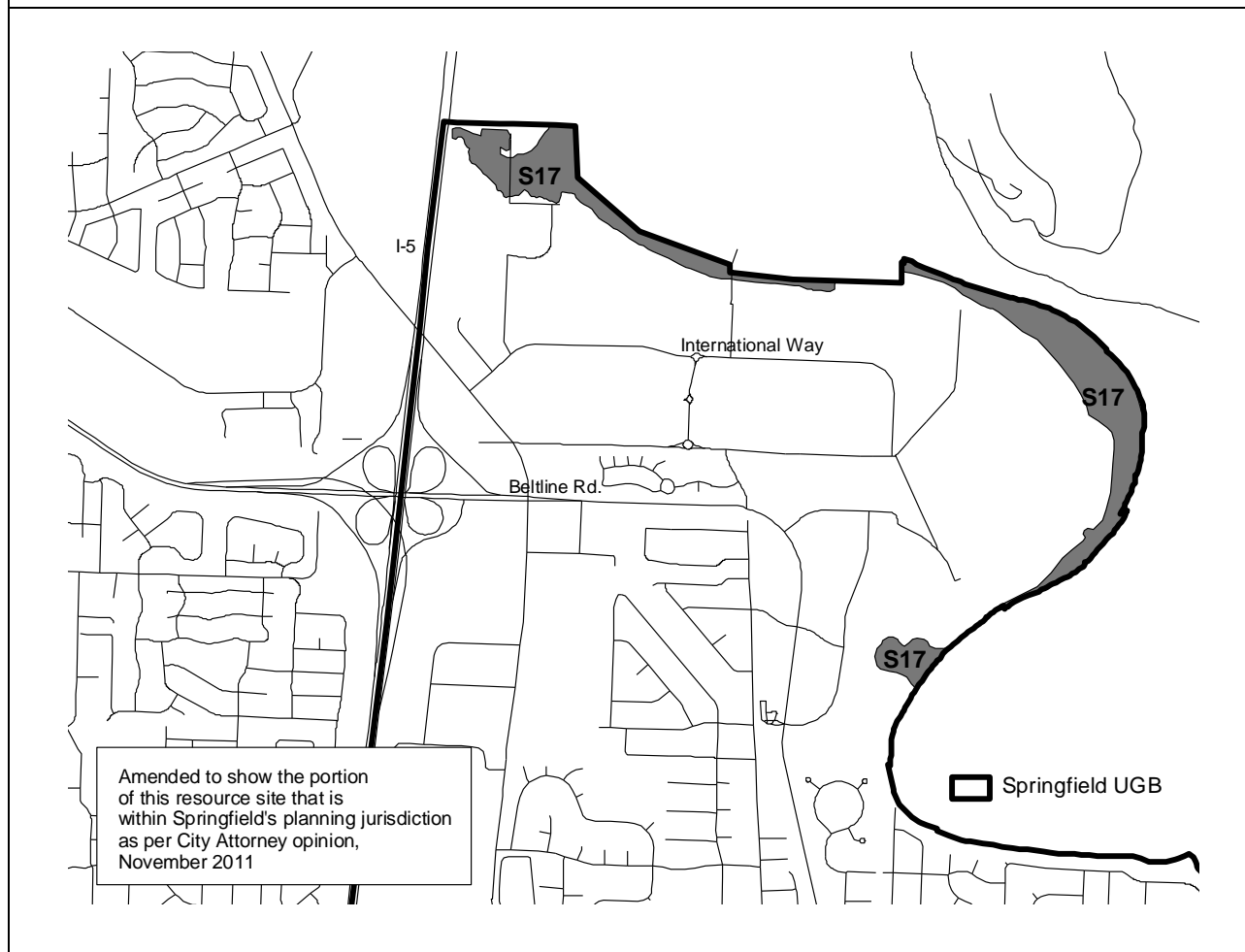
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The wetland, S-14 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about .23 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S17 Maple Island Slough/McKenzie River	Locally Significant Wetlands (M20) High Quality Wetlands	31.92 Within the UGB	67 High Quality Resource Site	Not Assessed

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. Implement the provisions of the Riverbend Master Plan as it pertains to resource protection. The McKenzie River is a water-quality limited watercourse and is protected by a 75-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. As a tributary to the McKenzie River, Maple Island Slough is protected by a 50-foot development setback and site plan review standards when developing within 150 feet of the resource site. No additional setbacks are necessary.



Description:

This 31.92 acre site is an oxbow slough of the McKenzie River north of the Sony Campus Industrial area. The site also includes the riparian corridor along the McKenzie River east and south of the Riverbend hospital site. Although most of the resource site is outside the urban growth boundary, the wildlife habitat rating of 67 warrants its inclusion in the inventory.

The slough is part of Springfield's storm water management system that receives drainage from north Springfield. Portions of the slough are within the FEMA 100-yr floodway boundary. The Maple Island Slough site is currently designated for agricultural use, with a small area on the southern edge designated for campus industrial uses.

Site S17 is a good representation of a Willamette Valley riparian corridor vegetated with mostly native plant species. Structural diversity, and quantity and density of vegetation are high. Oregon ash, red alder, and bigleaf maple are the dominant tree species. Red osier dogwood, snowberry, rose and Oregon hazel are the dominant shrub species. The site provides feeding, roosting, and nesting habitat for a variety of bird, mammal, and herptile species. Connection to the McKenzie River on both ends of the site enhance the interspersed value and wildlife use of this site.

Resource and Impact Area Summary

Resource Acreage:	31.92
Impact Area Acreage:	46.95
Combined Resource and Impact Area:	78.87
Vacant Acres within the Combined Area:	39.51
Number of Parcels Affected:	43
Combined Parcel Acreage:	281.88

Conflicting Uses by Acre and Zoning District

Site ID	CI	LDR	MDR	PL	Total Acres
S-17	13.84	.15	6.92	11.01	31.92
S-17 Impact Area	25.7	1.81	14.3	5.14	46.95
Total	39.54	1.96	21.22	16.15	78.87

Conflicting Uses by Vacant Acre and Zoning District

Site ID	CI	LDR	MDR	PL	Total Acres
S-17	3.22	0	5.13	10.77	19.12
S-17 Impact Area	8.53	0	8.71	3.15	20.39
Total	11.75	0	13.84	13.92	39.51

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

S17 includes area adjacent to the McKenzie River, a water quality limited water course. Lands along the McKenzie are protected by a 75-foot development setback and a site plan review requirement. S17 also includes the Maple Island Slough, a tributary to the McKenzie River. Land adjacent to the Slough is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for S-17

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

S-17 is one of the most highly rated riparian resource sites in Springfield. The wetland portion of the slough is rated as a high quality wetland. It provides diverse wildlife habitat and the water quality control function of the riparian site is intact. Fully allowing conflicting uses would mean the loss of these functions.

Social Consequences

The Willamalane Parks and Recreation District Comprehensive Plan proposes a special use park in the Riverbend area for a riverfront park that would provide public access to the resource. Fully protecting the resource may mean the loss of this area for public recreational purposes. Limiting conflicting uses could allow for limited public recreational access.

Economic Consequences

That portion of S-17 that is outside of the urban growth boundary is outside the jurisdiction of the City of Springfield. The area within Springfield's planning jurisdiction includes 39.51 vacant acres of industrial and residential land in the combined resource and impact area. Most of this acreage is within the FEMA 100-year flood plain and flood way increasing the cost of its development. Fully protecting this land would mean the loss of potential industrial and residential land.

The slough system provides water quality and storm water control functions that serve much of north Springfield. These functions could be replaced by engineered systems, but at a high cost.

Limiting conflicting uses could preserve the functions of the resource while allowing development to occur. The recently adopted Riverbend Master Plan allows development outside of a 100-ft setback from the McKenzie River, and imposes storm water management protections to reduce runoff velocity and to pre-treat water released from the area into the slough and river.

Energy Consequences

None of note.

Recommended Program for Protection

The slough is a significant and important part of the McKenzie River system. Water quality and storm water runoff should receive particular attention in development plans. Removal of native vegetation or other alteration of the slough should be prohibited.

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. Implement the provisions of the Riverbend Master Plan as it pertains to resource protection. The McKenzie River is a water-quality limited watercourse and is protected by a 75-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. As a tributary to the McKenzie River, Maple Island Slough is protected by a 50-foot development setback and site plan review standards when developing within 150 feet of the resource site. No additional setbacks are necessary.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	CI	MDR	PLO	TOTAL ACRES
S-17 (Maple Island Slough)	3.18	0	10.77	13.95
S-17 50-ft. Setback (Maple Island Slough)	2.83	0	1.95	4.78
Total	6.01	0	12.72	18.73
S-17 (McKenzie River)	.04	5.13	0	5.17
S-17 75-ft. Setback (McKenzie River)	.03	4.15	0	4.18
Total	.07	9.28	0	9.35
Grand Total	6.08	9.28	12.72	28.08

Site S-17 includes the McKenzie River (which is protected by a 75-foot setback) and the Maple Island Slough (which is protected by a 50-foot setback). The acreage figures below reflect the fact that most of S-17 is outside the Springfield Urban Growth Boundary. The figures include only the acreage within the UGB.

About 13.95 acres of the Maple Island Slough segment of S-17 is classified as vacant by the Lane County Assessor's Office. About 5.17 acres of the McKenzie River is classified as vacant. The vacant acreage includes portions of 8 lots. Limiting conflicting uses would allow some

development to occur within the riparian resource area where the developer could show how the essential functions of the resource area could be preserved or enhanced. A 50-foot development setback is already required for Maple Island Slough under Article 31. A 75-foot setback is required for the McKenzie River. No additional setback is proposed.

A 50-foot setback on the Maple Island Slough would affect 4.78 acres of vacant industrial and public land. A 75-foot setback on the McKenzie River would affect 4.18 acres of vacant industrial and residential land. The affect of the setbacks on buildable land could be reduced by aligning development such that yards and other open space are within the setbacks. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

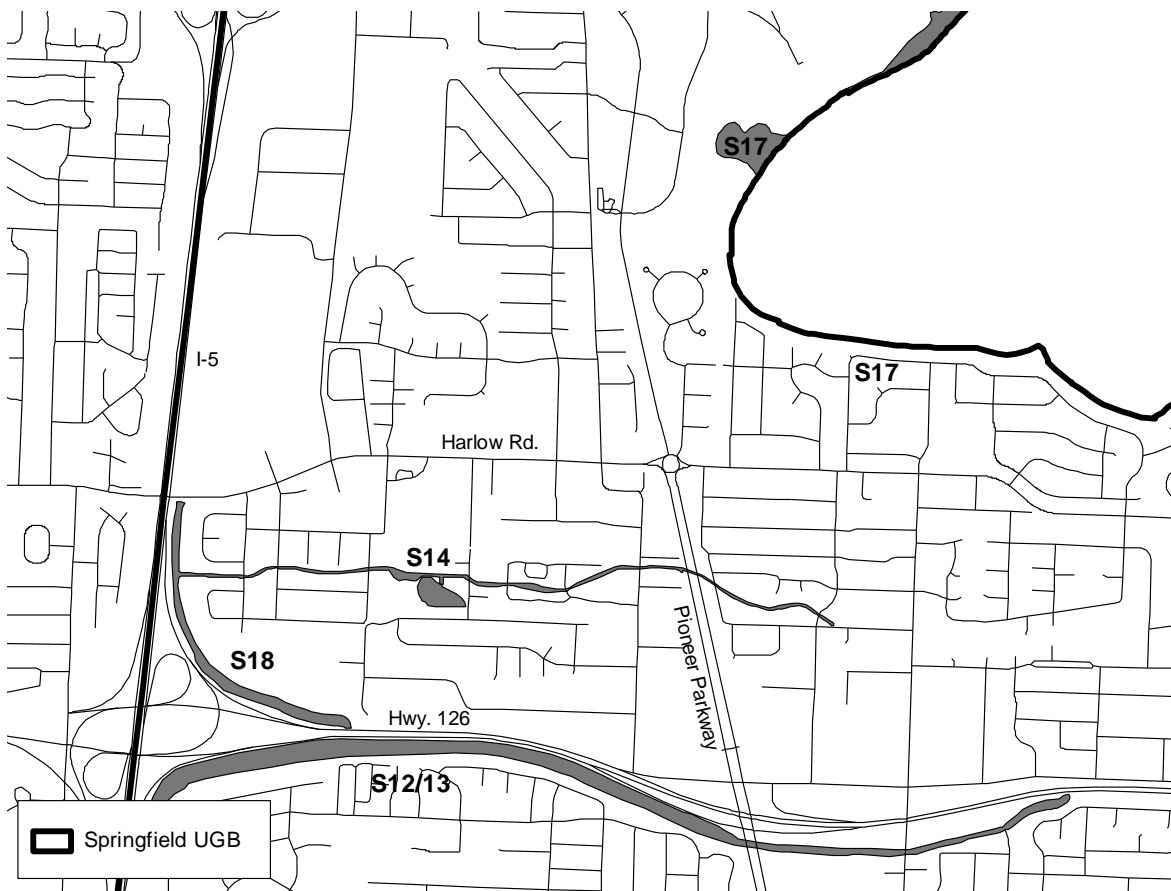
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The resource, S-17 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. The 50 and 75-foot development setbacks on S-17 are required under stormwater provisions of the Springfield Development Code, and thus the 9.35 acre impact of the combined setbacks is not attributed to this report.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S18 SCS Channel #6	Yes (M27)	7.51	22-23 Moderate Quality Resource Site	Channel 6 5.8 (Poor) Channel 6- Lockhaven 6.4 (Fair)

Goal 5 Recommendation: Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.



Description:

This two mile long waterway is located in western Springfield between I-105 and Harlow Rd. Historically it flowed from the Irving Slough across Springfield and eastern Eugene into the Willamette River. It now occupies about 7.51 acres within Springfield and flows through an area

designated for low density residential development. This waterway is associated with S-14 (Guy Lee) and flows through Guy Lee Park and School.

The channel serves storm water and open space functions. It is listed on the local wetland inventory and flows almost entirely on hydric soils. It is connected to other waterways in Eugene's Willakenzie neighborhood, although it is interrupted by a piped system for a short distance. It has a relatively low WHA score (22-23), although the field biologist notes the site has restoration potential, especially in that area near Guy Lee School.

This site is similar to the many small, riparian remnants and longer, intermittent channels that are scattered throughout the metropolitan area. The steep banked ditches are generally four to eight feet wide. Reed canarygrass, rush, spikerush, and soft stem bulrush are common emergent plants within the waterways. Young willow and black cottonwood have begun to establish along the top of the banks. This and other metropolitan channels remain connected to the greater hydrological system, although the channels themselves may have become intermittent due to piping under streets and through portions of some neighborhoods.

Additional information from the *Inventory and Channel Assessment for Springfield Waterways*

Channel 6

Riparian Profile Details

- Plant communities of grass/field, then brush/shrub/scrub and dominated by invasive species were recorded most often. One each of hardwood, conifer, and non-vegetated were also recorded.
- Dominant invasive plant species: *Phalaris arundinacea* (Reed Canary-grass), *Rubus armeniacus* (Armenian Blackberry), *Festuca arundinacea* (Tall Fescue), *Holcus lanatus* (Velvet Grass), and *Hypericum perforatum* (St. John's wort).
- Co-dominant invasive plant species: *Holcus lanatus* (Velvet Grass), *Phalaris arundinacea* (Reed Canary-grass), *Phalaris aquatica* (Harding grass), and *Hedera helix* (English Ivy).
- Invasive plant species listed as present: *Rubus armeniacus* (Armenian Blackberry), *Phalaris arundinacea* (Reed Canary-grass), *Holcus lanatus* (Velvet Grass), *Phalaris aquatica* (Harding grass), *Iris pseudacorus* (Yellow flag iris), *Solanum dulcamara* (Nightshade), and *Convolvulus sp.* (Morning Glory/Bindweed).
- Others invasive plant species observed in the system: *Dipsacus fullonum* (Teasel), *Buddleia davidii* (Butterfly bush), and many unidentified ornamentals.
- Bullfrogs and nutria were listed as invasive animals/amphibian observed.
- Burrowing, undercutting of banks, tunneling and eating of vegetation to the point of bare banks were recorded as damage by invasive animals/amphibian.
- A Pacific green tree-frog, small fish, ducks, and Belted Kingfishers were recorded for wildlife observed.
- Nutria scat was recorded as wildlife evidence.
- *Myosotis laxa* (small-flowered forget-me-nots), *Rorippa curisiliqua* (Curve-pod yellowcress) and *Sparganium emerum* (Simple-stem Bur-reed) were recorded for seed collection.

- Riparian buffer enhancement and neighborhood education were recorded most often for project opportunities. Bank stability was also recorded.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding each health rating for each reach together then dividing it by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	1.9
Water Appearance	5.8
Nutrient Enrichment	6.4
Bank Stability	7.5
Canopy Density/Cover	2.0
Invasive Damage – P	5.3
Invasive Damage – A/A	7.9
Waste Presence	9.8
Barriers to Fish (SBW)	0 N/A
Insect/Invert Habitat (SBW)	0 N/A
In-stream Fish Cover (SBW)	0 N/A
Average Overall Health Rating	5.8 = Poor

Resource and Impact Area Summary

Resource Acreage:	7.51
Impact Area Acreage:	52.29
Combined Resource and Impact Area:	59.80
Vacant Acres within the Combined Area:	11.52
Number of Parcels Affected:	164
Combined Parcel Acreage:	100.91

Conflicting Uses by Acre and Zoning District

SITE ID	HDR	LDR	LMI	MDR	PLO	TOTAL ACRES
S-18	0	3.31	2.94	.13	1.13	7.51
S-18 Impact Area	.34	38.24	6.63	.98	5.94	52.29
Total	.34	41.71	9.57	1.11	7.07	59.8

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	HDR	LDR	LMI	MDR	PLO	TOTAL ACRES
S-18	0	1.84	0	.13	.28	2.25
S-18 Impact Area	0	6.65	0	.98	1.64	9.27
Total	0	8.49	0	1.11	1.92	11.52

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for S-18

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

The channel serves an important storm water management and conveyance function for much of northwest Springfield. Its hydrologic control function is intact. It is highly disturbed and largely surrounded by development but provides habitat for some wildlife species. Fully allowing conflicting uses would mean the loss of the open system for storm water management and for what habitat functions that it provides.

Social Consequences

S-18 is not aesthetically pleasing, but it has high potential for restoration and has potential for educational use. It provides some recreational opportunities. The Guy Lee School portion of S-18 is proposed for a school/park project by Willamalane Parks and Recreation District's Comprehensive Plan.

Economic Consequences

Fully protecting S-18 would mean the loss of about 11.52 vacant acres of combined resource and impact area land. About 5.38 acres of this vacant land is owned by the school district and Willamalane Parks and Recreation District.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	MDR	PLO	TOTAL ACRES
S-18	1.84	.13	.28	2.25
S-18 25-ft. Setback	1.46	.22	.28	1.96
Total	3.3	.35	.56	4.21

About 2.25 acres of S-18 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 10 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the resource area could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect 1.96 acres of vacant residential and public land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space that is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

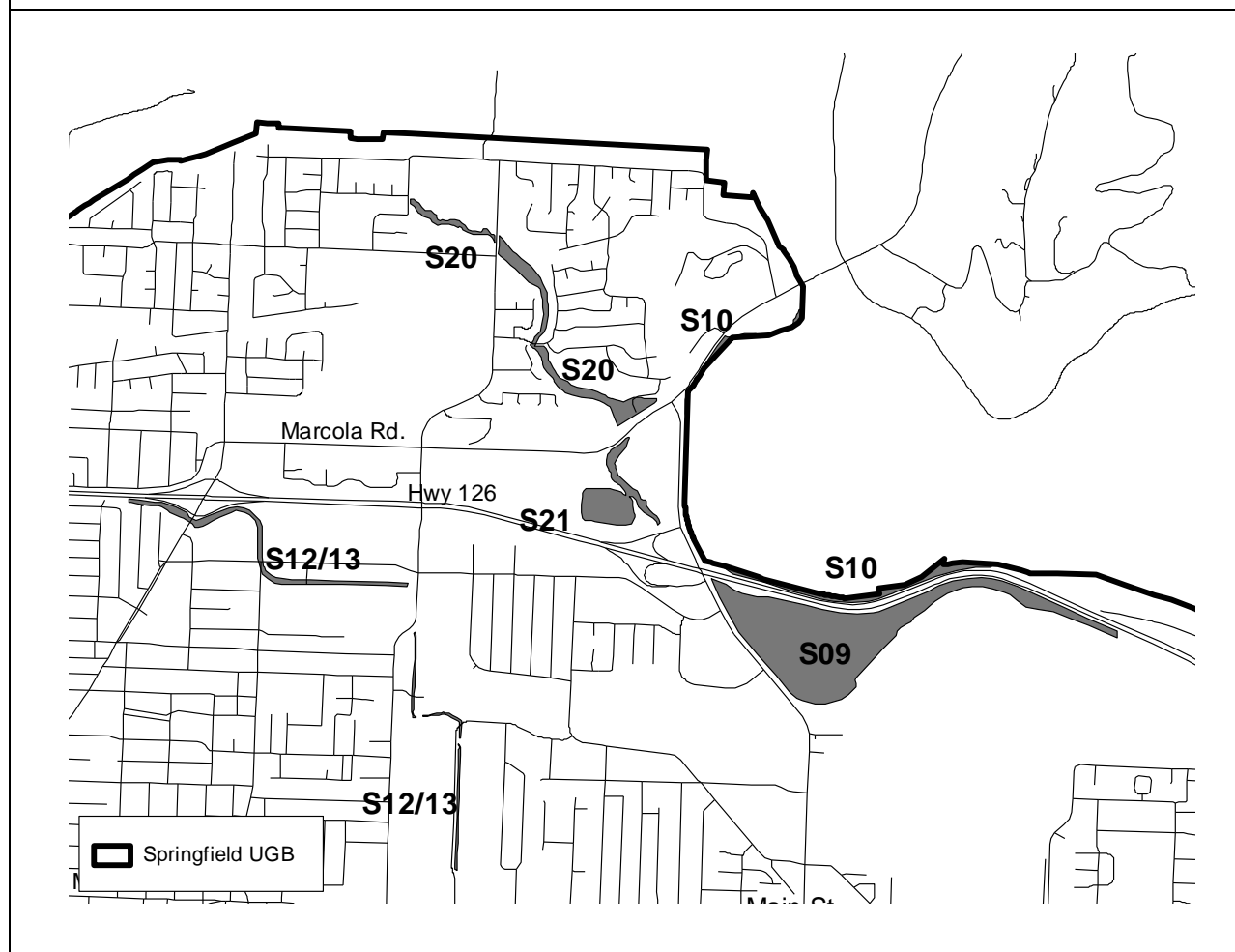
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The wetland, S-18 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about 1.96 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S20 Irving Slough North	Locally Significant Wetlands (M16a-c) M16a-High Quality M16b Moderate Quality M16c Moderate Quality	14.71	67 High Quality Resource Site	Irving Slough 5.9 (Poor)

Goal 5 Recommendation: Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.



Description:

This 14.71 acre site includes a riparian slough and wetland area (M16a-c) on the south side of Moe Mt. The site is an important source of water and food for wildlife. Structural diversity,

quantity, and density of vegetation is high, with some interspersed snags. Black cottonwood, Oregon ash, red alder, and bigleaf maple are the dominant tree species with some western red cedar. The site provides feeding, roosting, and nesting habitat for a variety of bird, mammal, and herptile species.

The slough is part of Springfield's storm water management system as described in the West Springfield Drainage Master Plan. Proximity to the McKenzie River and other upland sites (e.g., Vitus Butte, and Moe Mt.) enhance the interspersed value and wildlife use of this site.

Additional information from the *Inventory and Channel Assessment Report for Springfield Waterways*

Irving Slough (North and South)

Riparian Profile Details

- Plant community of mostly hardwoods, then dominated by invasive species and grass/field.
- Dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry) and *Solanum dulcamara* (Nightshade).
- Co-dominant invasive plant species: *Phalaris arundinacea* (Reed Canary-grass), *Rubus armeniacus* (Armenian Blackberry), *Solanum dulcamara* (Nightshade), and *Hedera helix* (English Ivy).
- Invasive plant species listed as present: *Holcus lanatus* (Velvet Grass), *Dipsacus fullonum* (Teasel), *Solanum dulcamara* (Nightshade), *Hedera helix* (English Ivy), and *Phalaris arundinacea* (Reed Canary-grass).
- Others invasive plant species observed in the system: *Mentha pulegium* (Penny Royal), *Phalaris aquatica* (Harding grass), *Convolvulus sp.* (Morning Glory/Bindweed), and *Buddleia davidii* (Butterfly Bush).
- Nutria and bullfrogs were recorded as invasive animals/amphibian.
- Tunneling, undercutting of banks and stripping of vegetation were recorded as damage by invasive animals/amphibian.
- Minnows, carp, ducks, geese, Blue Heron and Bluegill were recorded as other wildlife observed.
- Deer scat was recorded for wildlife evidence.
- No plant species were identified for seed collection.
- Riparian buffer enhancement, neighborhood education and bank stabilization were recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding the health ratings for all reaches together then dividing by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	3.4
Water Appearance	7.6
Nutrient Enrichment	7.5
Bank Stability	6.0
Canopy Density/Cover	4.0
Invasive Damage – P	2.9
Invasive Damage – A/A	8.8
Waste Presence	9.2
Barriers to Fish (SBW)	7.4
Insect/Invert Habitat (SBW)	5.6
In-stream Fish Cover (SBW)	3.5
Average Overall Health Rating	5.9 = Poor

Resource and Impact Area Summary

Resource Acreage:	14.71
Impact Area Acreage:	37.22
Combined Resource and Impact Area:	51.93
Vacant Acres within the Combined Area:	14.14
Number of Parcels Affected:	76
Combined Parcel Acreage:	143.15

Conflicting Uses by Acre and Zoning District

SITE ID	HI	LDR	LMI	PLO	TOTAL ACRES
S-20	0	12.28	2.43	0	14.71
S-20 Impact Area	.9	33.27	2.98	.07	37.22
Total	.9	45.55	5.41	.07	51.93

Conflicting Uses by Acre and Zoning District

SITE ID	HI	LDR	LMI	PLO	TOTAL ACRES
S-20	0	4.21	0	0	4.21
S-20 Impact Area	0	9.93	0	0	9.93
Total	0	14.14	0	0	14.14

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for S-20

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

S-20 provides habitat for some wildlife species, although the fish habitat function has been degraded. The water-quality and hydrologic control functions are intact. The WHA score of 67 ranks this as a high quality resource site. The slough has high enhancement potential.

Recent residential development (Ambleside) has compromised some of the habitat value that was present when the WHA evaluation was first conducted. Fully allowing conflicting uses would mean the loss of the water quality and hydrologic control functions provided by the slough as well as the habitat values captured in the WHA.

Social Consequences

The slough is not generally appropriate for educational or recreational purposes and portions of the resource are not aesthetically pleasing. The slough is an amenity for many established residences along S-20. Fully allowing conflicting uses would mean the loss of a community water feature that has high potential for restoration.

Economic Consequences

Fully allowing conflicting uses would mean the loss of 14.14 acres of vacant residential acres within the combined resource and impact area. The hydrologic and water quality functions could be duplicated using engineered facilities, but at a high cost. Limiting conflicting uses could allow continued natural function while retaining the opportunity to develop additional residential neighborhoods within the existing urban growth boundary.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the 150-foot impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	TOTAL ACRES
S-20	4.21	4.21
S-20 25-ft. Setback	1.73	1.73
Total	5.94	5.94

About 4.21 acres of S-20 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 6 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the resource area could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect 1.73 acres of vacant residential land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space that is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

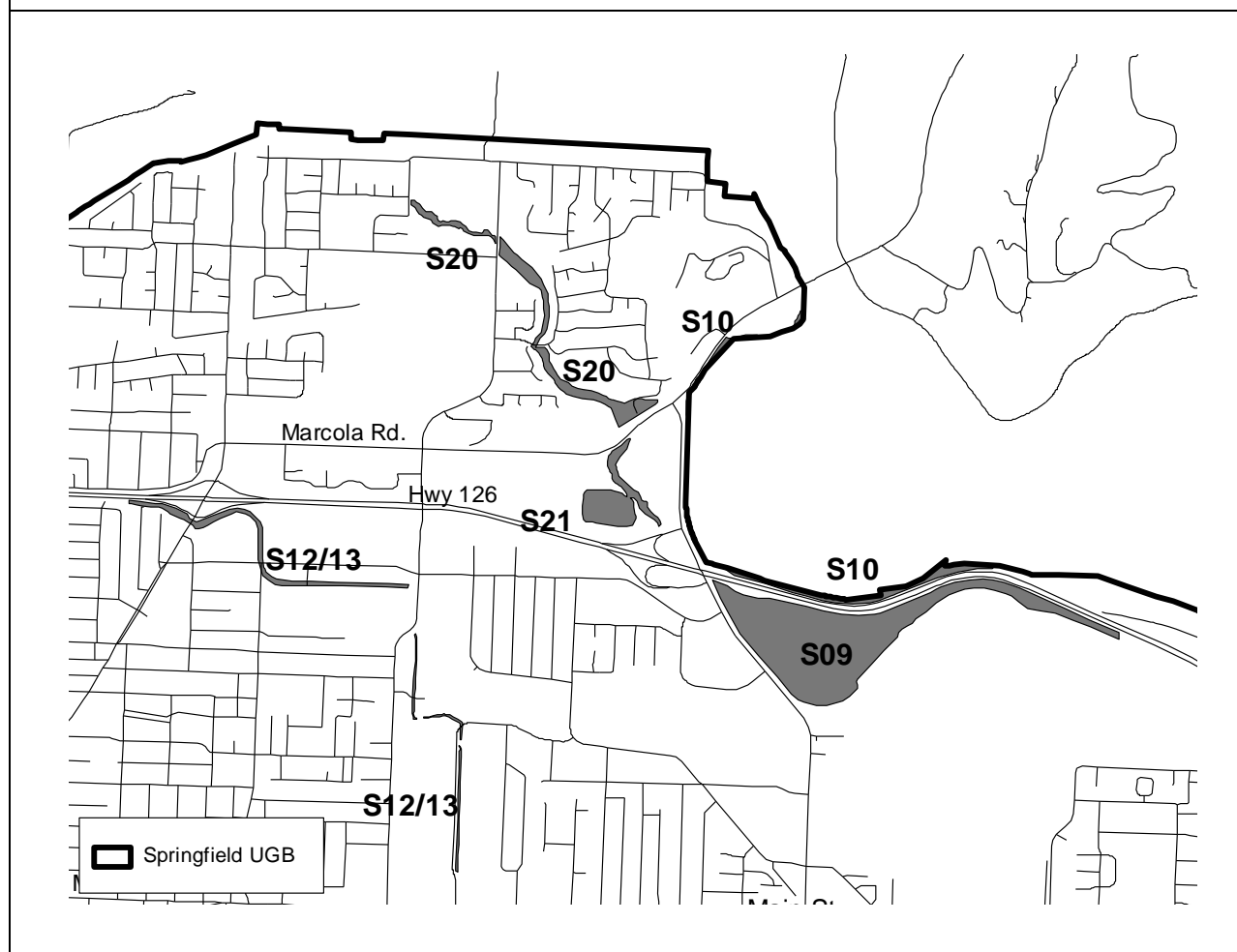
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The wetland, S-20 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about 1.73 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S21 South Irving Slough and Pond	Yes (M16c)	11.86	47 High Quality Resource Site	Irving Slough (North and South) 5.9 (Poor)

Goal 5 Recommendation: Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.



Description:

This 11.86 acre site is the southern end of Irving Slough, between Marcola Road and Hwy 126. The site includes a seven acre pond. This site is composed of a small pond and riparian channel with some aquatic plant growth. Vegetation around the pond is sparse in some areas with a few

pockets of black cottonwood, willow, and Himalayan blackberry. The banks of the pond are eroding. The adjacent riparian channel has steep banks and is vegetated primarily by exotic (introduced) plant species. The riparian channel connects to a high quality riparian channel and adjacent upland forest (Moe Mt.) enhancing its interspersed value.

The slough is part of Springfield's storm drainage system as shown in the West Springfield Drainage Master Plan. The slough passes between several industrial uses, then flows into a culvert which passes under the highway.

Additional information from the *Inventory and Channel Assessment for Springfield Waterways*

See S20-Irving Slough (North and South) or M16a-c

Resource and Impact Area Summary

Resource Acreage:	11.86
Impact Area Acreage:	17.08
Combined Resource and Impact Area:	28.94
Vacant Acres within the Combined Area:	7.11
Number of Parcels Affected:	18
Combined Parcel Acreage:	58.20

Conflicting Uses by Acre and Zoning District

SITE ID	HI	TOTAL ACRES
S-21	11.86	11.86
S-21 Impact Area	17.08	17.08
Total	28.94	28.94

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	HI	TOTAL ACRES
S-21	2.81	2.81
S-21 Impact Area	4.3	4.3
Total	7.11	7.11

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for S-21

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

The channel and pond provide habitat for some wildlife species. The site is documented as providing habitat for a state and federally listed specie. The water quality and fish habitat function is degraded. S-21's hydrologic control function is intact. Interspersion with other natural areas is high due to the proximity with the McKenzie River and other riparian corridors. Fully allowing conflicting uses would mean the loss of habitat for the listed specie, as well as the hydrologic control function that S-21 provides.

Social Consequences

S-21 is located within an established industrial area that is mostly developed. The resource is not appropriate for educational use. The Willamalane Parks and Recreation District's Comprehensive Plan shows S-21 as a location for a proposed off-street multi-use path. The pond was used for jet-ski races in the early 90's. It is considered moderately pleasing in appearance.

Economic Consequences

Fully protecting S-21 would mean the loss of 7.11 vacant acres of combined resource and impact area lands for industrial development. Additional land could be lost if steps taken to protect the listed specie require additional setbacks.

Allowing development to degrade the hydrologic control function that the slough and pond provide would be expensive to replace with engineered facilities. The pond and slough have a high potential for enhancement. Enhancement of the pond could create an amenity for future industrial development adjacent to the resource. Fully allowing conflicting uses could mean the loss of this potential amenity value.

Limiting conflicting uses could preserve the habitat and values of S-21 while allowing development of portions of the vacant industrial land.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics.

Coordinate with the Oregon Department of Fish and Wildlife to determine what additional measures may be needed to protect the listed specie habitat.

Existing native vegetation, including willows and cottonwoods, should be preserved. Non-invasive plants and garbage should be removed. Precautions should be taken to protect water quality from industrial site stormwater runoff. Current and future uses of the pond should be examined to monitor impacts on water quality and bank erosion.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage and Zoning District

SITE ID	HI	TOTAL ACRES
S-21	2.81	2.81
S-21 25-ft. Setback	1.22	1.22
Total	4.03	4.03

About 2.81 acres of S-21 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 3 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the resource area could be preserved or enhanced. A 25-foot development setback is recommended.

A 25-foot setback would affect 1.22 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space that is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

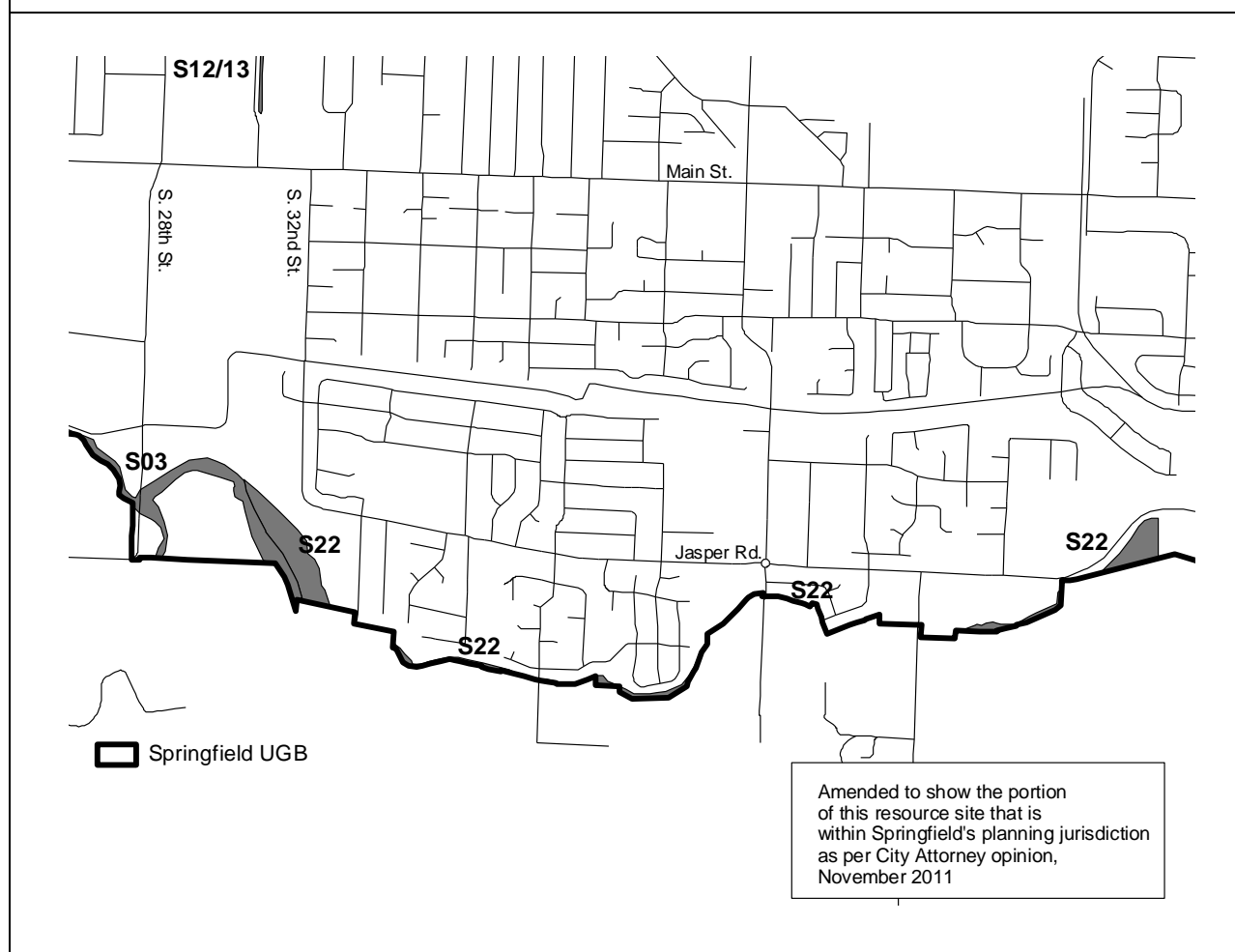
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The wetland, S-21 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. As mentioned above, the 25-foot development setback may affect about 1.22 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S22 Jasper Road Slough	Locally Significant Wetlands (W03a) Moderate Quality Wetlands	13.28	67 High Quality Resource site	Jasper Slough 5.8 (Poor)

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. S-22 includes the Jasper Slough which is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary. The documented presence of a state and federally listed specie requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.



Description:

Site S22 is a 27 acre resource, of which 13.28 acres lay within the Springfield's planning jurisdiction. It is located south of Jasper Road and north of the Middle Fork Willamette River. The slough flows through agricultural land and through or adjacent to developed residential areas.

The site is a remnant of a once more widespread system of riparian corridors that existed throughout the metropolitan area. It also connects with site S03, the Springfield Mill Race, and is influenced by the Middle Fork of the Willamette River. Existing vegetation provides wildlife habitat value. Great blue heron, osprey, and kingfisher are commonly observed. The banks are generally steep and vegetated with Himalayan blackberry as an understory with black cottonwood, willow, and bigleaf maple as the dominant overstory species. The water level varies seasonally. Interspersion value is moderate, due to proximity to other riparian corridors and uplands.

Additional information from the *Inventory and Channel Assessment for Springfield Waterways*.

Jasper Slough

Riparian Profile Details

- Plant community of hardwoods and one reach that is dominated by invasive species.
- Dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry) and *Phalaris arundinacea* (Reed Canary-grass).
- Co-dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry), *Iris pseudacorus* (Yellow Flag Iris), *Phalaris arundinacea* (Reed Canary-grass), and *Convolvulus sp.* (Morning Glory/Bindweed).
- Invasive plant species listed as present: *Iris pseudacorus* (Yellow Flag Iris), *Phalaris arundinacea* (Reed Canary-grass), *Holcus lanatus* (Velvet Grass), *Rubus armeniacus* (Armenian Blackberry), *Solanum dulcamara* (Nightshade), *Phalaris aquatica* (Harding grass), *Convolvulus sp.* (Morning Glory/Bindweed), and *Dipsacus fullonum* (Teasel).
- Others invasive plant species observed in the system: *Buddleia davidii* (Butterfly bush), *Polygonum sp.* (Knotweed), and *Mentha pulegium* (Penny Royal).
- Nutria and beaver were recorded as invasive animals/amphibian observed.
- Tunneling causing undercutting, loss of vegetation and beaver cutting were recorded as damage by invasive animals/amphibian.
- Wood Duck, Green Heron, Belted Kingfisher, Mallards, minnows, deer and Great Blue Heron were recorded as other wildlife observed.
- Nutria scat and deer scat were recorded for wildlife evidence.
- *Myostis laxa* (Small-flowered forget-me-not) were recorded for seed collection.
- Riparian buffer enhancement, neighborhood education and one culvert retrofit/replacement were recorded for project opportunities.

Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding the health ratings for all reaches together then dividing by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	6.6
Water Appearance	6.8
Nutrient Enrichment	4.5
Bank Stability	7.0
Canopy Density/Cover	3.3
Invasive Damage – P	2.0
Invasive Damage – A/A	8.5
Waste Presence	7.5
Barriers to Fish (SBW)	7.0
Insect/Invert Habitat (SBW)	6.4
In-stream Fish Cover (SBW)	3.9
Average Overall Health Rating	5.8 = Poor

Resource and Impact Area Summary

Resource Acreage:	13.28
Impact Area Acreage:	33.71
Combined Resource and Impact Area:	46.99
Vacant Acres within the Combined Area:	13.67
Number of Parcels Affected:	68
Combined Parcel Acreage:	144.11

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	MDR	TOTAL ACRES
S-22	10.4	2.88	13.28
S-22 Impact Area	30.55	3.16	33.71
Total	40.95	6.04	46.99

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	MDR	TOTAL ACRES
S-22	3.32	0	3.32
S-22 Impact Area	10.35	0	10.35
Total	13.67	0	13.67

Existing Protections:

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes.**

S22 includes the Jasper Slough. The slough is a tributary to a water quality limited watercourse (Willamette River) and is protected by a 50-foot setback and a site plan review requirement.

Site Specific ESEE Analysis for S-22

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

S-22 provides habitat for some wildlife species. The site is documented as providing habitat for a state and federally listed specie. The resource's fish habitat function is degraded, as is its water quality and hydrologic control functions. Fully allowing conflicting uses would mean the loss of habitat for the listed specie that S-22 provides.

Social Consequences

The site was judged not to be appropriate for educational uses, and is not aesthetically pleasing. S-22 has high potential for enhancement. It was also judged to have potential for providing recreational opportunities, although the Willamalane Park and Recreation District Comprehensive Plan shows no proposed uses for the site.

Fully allowing conflicting uses may negate the future use of the site for recreational purposes.

Economic Consequences

Fully protecting the resource site would mean the loss of 13.67 acres of vacant residential land within the combined resource and impact area boundaries. Additional land could be lost if steps taken to protect the listed specie require additional setbacks.

Limiting conflicting uses could reduce economic impact of lost development opportunity.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. The riparian strips along the channel are important to maintaining water quality and bank stability. Native riparian vegetation should be protected and non-native, invasive plants should be removed. Barren areas of the bank should be replanted with native plants.

S-22 includes the Jasper Slough. The western reach of Jasper Slough is listed as a tributary to a water-quality limited watercourse and as such is protected by a 50-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary. The documented presence of a state and federally listed specie requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	TOTAL ACRES
S-22	3.32	3.32
S-22 50-ft. Setback	3.13	3.13
Total	6.45	6.45

About 3.32 acres of S-22 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 12 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the riparian corridor could be preserved or enhanced. A 50-foot development setback is already required for the riparian area under Article 31. No additional setback is proposed.

A 50-foot setback would affect 3.13 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

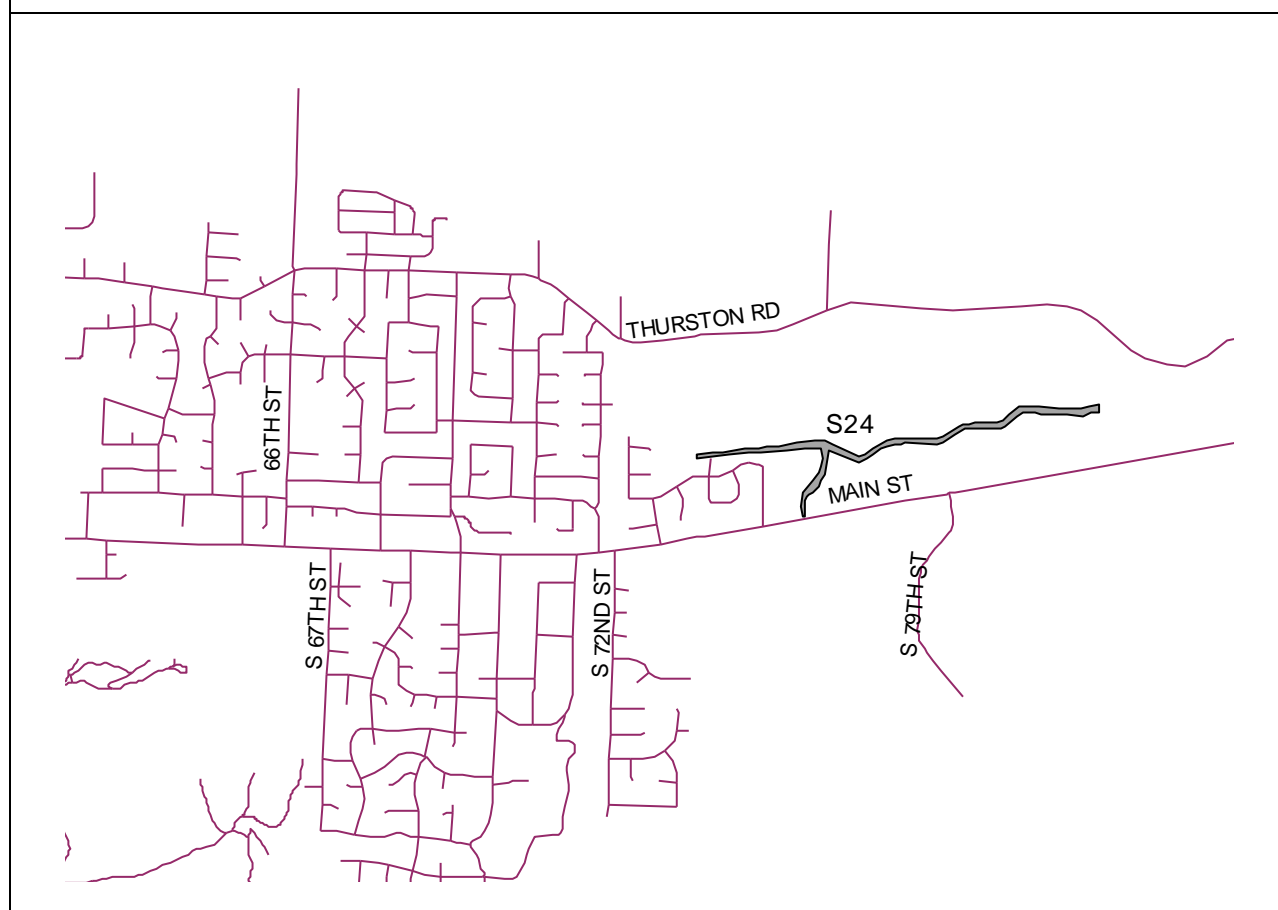
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The resource, S-22 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 3.13 acre impact of the setback is not attributed to this report.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
S24 Gray Creek	Locally Significant Wetlands (M14) Moderate Quality Wetlands	6.63	55 High Quality Resource Site	Gray Creek 6.5 Fair

Goal 5 Recommendation: Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed specie within the general vicinity requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.



Description:

Site S24 is a 6.63 acre site in east Springfield, north of Highway 126 (Main Street) and south of the McKenzie River. Bob Artz Memorial Park and a Thurston Elementary School are adjacent to the stream. The site is the middle stretch of a stream channel (called Thurston Ditch on USGS Quad Map) which empties, via a pipe and an SCS channel into Cedar Creek. The western reach of the channel abuts residential development, while the eastern reach is outside the urban growth

boundary. It is a remnant of a once more widespread system of riparian corridors throughout the metropolitan area.

Structural and vegetative diversity are limited; however, the existing vegetation does provide some wildlife habitat value. The site is documented as providing habitat for a state and federally listed specie. The banks are generally steep and vegetated with Himalayan blackberry as an understory with black cottonwood, willow, and bigleaf maple as the dominant overstory species. Agricultural fields border both sides of the creek.

The water level varies seasonally. Interspersion value is moderate, due to proximity of other riparian corridors.

Additional information from the *Inventory and Channel Assessment Report for Springfield Waterways*

Gray Creek

Riparian Profile Details

- Plant community of mixed and one reach that is hardwood.
- Dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry).
- Co-dominant invasive plant species: *Rubus armeniacus* (Armenian Blackberry).
- Invasive plant species listed as present: *Holcus lanatus* (Velvet Grass), *Mentha pulegium* (Penny Royal), and *Lysimachia nummularia* (Moneywort).
- Others invasive plant species observed in the system: *Phalaris arundinacea* (Reed Canary-grass), *Solanum dulcamara* (Nightshade), and *Dipsacus fullonum* (Teasel).
- No invasive animals/amphibian was recorded.
- No damage by invasive animals/amphibian was recorded.
- No wildlife was observed.
- No wildlife evidence was recorded.
- No plant species were identified for seed collection.
- Riparian buffer enhancement and bank stabilization were recorded for project opportunities.

Channel Assessment Scoring and Overall Health Rating Details

Averages for the system are listed below. Criteria averages were derived by adding each criteria score together and dividing it by the number of reaches. Overall health rating averages were derived by adding the health ratings for all reaches together then dividing by the number of reaches.

Scored Criteria	Criteria Averages on a Scale of 1 to 10
Channel Condition	6.3
Water Appearance	0 dry
Nutrient Enrichment	0 dry
Bank Stability	6.0
Canopy Density/Cover	5.5
Invasive Damage – P	3.0

Invasive Damage – A/A	10.0
Waste Presence	8.8
Barriers to Fish (SBW)	9.0
Insect/Invert Habitat (SBW)	6.8
In-stream Fish Cover (SBW)	3.0
Average Overall Health Rating	6.5 = Fair

Resource and Impact Area Summary

Resource Acreage:	6.63
Impact Area Acreage:	34.67
Combined Resource and Impact Area:	41.30
Vacant Acres within the Combined Area:	9.82
Number of Parcels Affected:	28
Combined Parcel Acreage:	189.65

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
S-24	3.52	3.11	6.63
S-24 Impact Area	19.61	15.06	34.67
Total	23.13	18.17	41.30

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
S-24	1.46	.01	1.47
S-24 Impact Area	1.20	.05	1.25
Total	2.66	.06	2.72

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **No**

Site Specific ESEE Analysis for S-24

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

S-24 is rated as a high quality resource site. The creek provides diverse wildlife habitat including state and federally listed species, but its water-quality and hydrologic control functions have been degraded. Fully allowing conflicting uses will mean the loss of the habitat function. Limiting conflicting uses could allow future development while maintaining much of the habitat function.

Social Consequences

S-24 is adjacent to or flows through large tracts of public land owned by both Willamalane Park and Recreation District and School District 19. Willamalane's Comprehensive Plan shows proposed school-park projects for the area. There are large tracts of public ownership along the creek as well. These currently serve agricultural and residential uses. Fully allowing conflicting uses would not cause the complete loss of S-24's habitat function due to the Public Land and Open Space zoning. Development of the privately held land would mean the loss of much of the habitat function provided by those parcels. Limiting conflicting uses, especially on the privately held land that is zoned for residential development could help retain the habitat function of the site.

Economic Consequences

Fully protecting S-24 would mean the loss of 9.82 acres of vacant residential land within the combined resource and impact area boundaries. Full protection could impact the future development and use of the park and school facilities, if that protection went so far as to preclude anything more than a natural park.

Limiting conflicting uses could allow a variety of public uses as well as residential development near the resource without completely compromising its habitat values.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses that may impact the resource. Maintain an average 25-foot development setback from the resource. Allow development within the impact area using low impact development practices that are appropriate for the soil, water table and other site characteristics. The documented presence of a state and federally listed species requires coordination with the Oregon Department of Fish and Wildlife to determine what (if any) additional measures may be needed.

The riparian strips along the channel are important to maintaining water quality and bank stability. Native riparian vegetation should be protected and non-native, invasive plants should be removed. Barren areas of the bank should be replanted with native plants.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
S-24	1.46	.01	1.47
S-24 50-ft. Setback	1.20	.05	1.25
Total	2.66	2.66	2.72

About 1.47 acres of S-24 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 4 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the riparian resource area could be preserved or enhanced. A 50-foot development setback is already required for the resource under Article 31. No additional setback is proposed.

A 50-foot setback would affect 1.25 acres of vacant residential and public land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

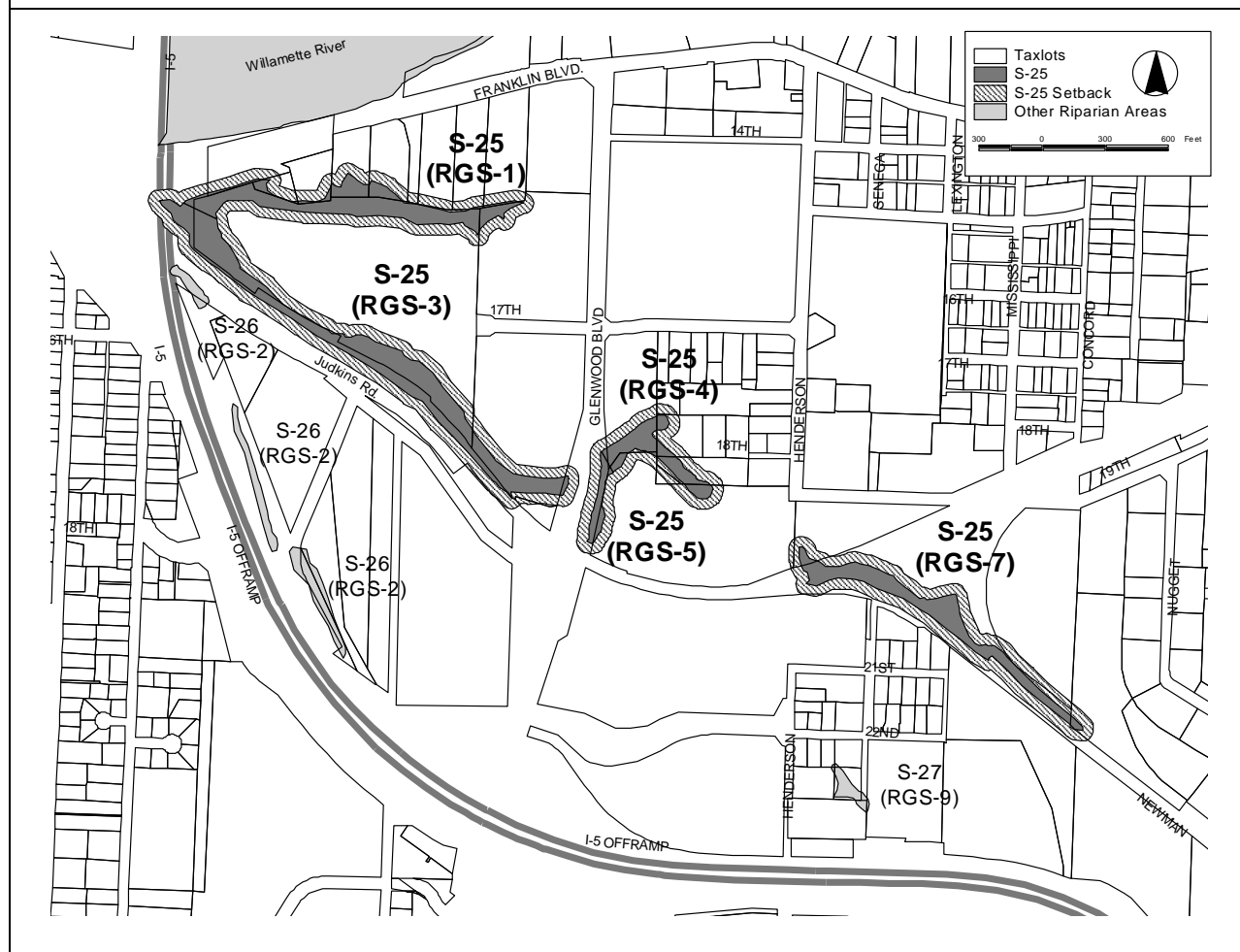
Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The resource, S-24 was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 1.25 acre impact of the setback is not attributed to this report.

Site: S-25 (Formerly E39) (RGS-1,3,4,5, and 7)	Associated Wetlands: W-20, W-21, W-22 Moderate Quality Wetlands	Acres: 12.30	WHA Score: 46-47 High Quality Resource Site
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Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. S-25 is associated with the Glenwood Slough, the Glenwood North Channel and a section of the Moon Mt. System. The Slough and North Channel are protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the slough also protects S-25. A 339 ft. segment of S-25 is not protected by the 50-ft setback provided by the stormwater WQLW standards found in SDC Section 4.3-115. This unprotected segment of S-25 should be covered by a 25-foot development setback and the protections afforded by SDC Section 4.3-117.



Description:

Site S-25 (formerly E-39) consists of segments of the Glenwood Slough—North Channel and a section of the Moon Mt. system near or adjacent to Interstate 5, Franklin Boulevard, Glenwood Boulevard and the Union Pacific Railroad tracks in the Glenwood area. S-25 is generally surrounded by industrial uses, railroad tracks and a highway.

The western portion of S-25 wraps around the Glenwood solid waste transfer station. At its west end, the slough passes under the Willamette River I-5 overpass. This western portion has been channelized with cement sides.

The portions of S-25 on either side of Glenwood Boulevard are more natural and contain significant riparian vegetation including willows (*Salix* spp.), black cottonwood (*Populus trichocarpa*), sedge (*Carex* spp.), rush (*Juncus* spp.), cattails (*Typha latifolia*), and reed canarygrass (*Phalaris arundinacea*). Interspersion with other natural areas is limited by I-5 and other adjacent roads, but S-25's proximity to the Willamette River may increase the number of wildlife species in the area. The Division of State Lands has determined that portions of this site are regulated wetlands (W-20, W-21, and W-22).

No fish survey was conducted for S-25 and it is not shown on ODFW maps of fish-bearing streams. The proximity and open connectivity to the Willamette River also suggests that fish are present in the Slough.

Observed Vegetation

Woody Vegetation		Herbaceous Vegetation	
<i>Fraxinus latifolia</i>	Oregon Ash	<i>Festuca arundinacea</i>	Tall Fescue
<i>Salix sitchensis</i>	Sitka Willow	<i>Plantago lanceolata</i>	English Plantain
<i>Cornus stolonifera</i>	Red-Osier Dogwood	<i>Daucus carota</i>	Queen Anne's Lace
<i>Rubus discolor</i>	Himalayan blackberry	<i>Aira caryophyllea</i>	Silver Hairgrass
<i>Populus trichocarpa</i>	Black Cottonwood	<i>Lathyrus sp.</i>	Wild Pea
<i>Robinia pseudoacacia</i>	Black Locust	<i>Cirsium arvense</i>	Canada Thistle
<i>Rubus armeniacus</i>	Armenian Blackberry	<i>mixed grasses (unidentified)</i>	
<i>Acer macrophyllum</i>	Oregon Maple		

Wetland Vegetation

Trees/ Shrubs		Vines/ Herbs	
<i>Fraxinus latifolia</i>	Oregon Ash	<i>Mentha arvensis</i>	Field mint
<i>Salix sitchensis</i>	Sitka Willow	<i>Biden sp.</i>	Begger's tick.
<i>Cornus stolonifera</i>	Red-Osier Dogwood	<i>Juncus effusus</i>	Soft Rush
		<i>Carex leptopoda</i>	Short-Scale Sedge

Soils

Soils—Mapped Series	Chehalis silty clay loam
Hydrologic Source	Groundwater

Summary of Riparian Functional Assessment

Riparian ID	Reach Length	Stream/Pond Width	Riparian Width	Water Quality	Flood Management	Thermal Regulation	Wildlife Habitat
RGS-1	1,681 ft.	120 ft.	50 ft.	H	H	H	M
RGS-3	2,706 ft.	50-75 ft.	100 ft.	H	L-M	H	M-H
RGS-4	780 ft.	50-75 ft.	50-75 ft.	H	M	H	H
RGS-5	339 ft.	2-6 ft.	75 ft.	M	M	H	M
RGS-7	1,669 ft.	8-10 ft.	120 ft.	H	L	H	M
Total Length: 7185 ft.			Modal Average	H	M	H	M

Resource and Impact Area Summary

Resource Acreage:	12.30
Impact Area Acreage:	45.01
Combined Resource and Impact Area:	55.02
Vacant Acres within the Combined Area:	8.57
Parcels Affected (Including Impact Area):	32
Combined Parcel Acreage:	308.09

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	LMI	PLO	*Right-of-Way	TOTAL ACRES
S-25	.17	7.71		4.42	7.88
S-25 Impact Area	1.09	28.23	1.01	14.68	30.33
Total	1.26	35.94	1.01	16.81	38.21

*Right-of-way does not typically have a zoning designation. As such, the right-of-way acreage shown for the conflicting use acreage is not counted towards the total. The right-of-way acreage is shown here because a large portion of the resource and its impact area are within ODOT and railroad right-of-ways.

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	LMI	PLO	TOTAL ACRES
S-25	0	.67	0	.67
S-25 Impact Area	0	6.89	1.01	7.90
Total	0	7.56	1.01	8.57

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in Section 4.3-115 of the Springfield Development Code? **Yes.**

S-25 includes the Glenwood Slough, the Glenwood North Channel and a section of the Moon Mt. system. The Glenwood Slough and the North Channel are tributaries to a water quality limited watercourse (Willamette River) and are protected by a 50-foot setback and a site plan review requirement.

S-25 overlaps protected wetlands W-20, W-21, and W-22. The Glenwood Refinement Plan includes policies that give direction for environmental design affecting S-25. The Refinement Plan states, “Significant wetland areas in Glenwood shall be protected from encroachment and degradation in order to retain their important functions and values related to fish and wildlife habitat, flood control, sediment, and erosion control, water quality control, and ground water pollution control,” (Policy 1, pg. 92, Environmental Element).

Site Specific ESEE Analysis for S-25

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

With WHA scores ranging from 22 to 61 for five individual reaches of the stream, S-25 is rated as a high quality resource site. The Riparian Functional Assessment prepared by Pacific Habitat Services rated S-25’s various reaches as well. The mode average of the assessment scores for S-25’s Water Quality and Thermal Regulation Functions was “High.” S-25’s Flood Management and Wildlife Habitat functions average was “Medium.”

Much of S-25 includes inventoried locally significant wetlands (W-20, W-21, and W-22). The water quality and hydrologic control functions of these wetland sites are impacted or degraded. The resource provides habitat for some wildlife species, although the fish habitat is degraded. Fully allowing conflicting uses would mean the loss of the riparian and wetland functions that S-25 provides.

Social Consequences

S-25 is located in an area that is heavily impacted by existing industrial and residential development. The stream is not easily accessible to the public and it is not located near a school. The Willamalane Park and Recreation District Comprehensive Plan shows no anticipated park facilities or natural areas near the resource site. For these reasons it is not appropriate for educational or recreational uses.

Economic Consequences

Fully allowing conflicting uses would mean the loss of the riparian and wetland functions of the resource. These functions could be mimicked using engineered facilities at a significant cost. Fully protecting the resource site would mean the loss of 7.56 acres of vacant industrial land within the combined resource and impact area boundaries.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. S-25 includes the Glenwood Slough, the Glenwood North Channel and a section of the Moon Mt. system. The Slough and the North Channel are protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the slough also protects S-25. A 339 ft. segment of S-25 is not protected by the 50-ft setback. This unprotected segment of S-25 should be covered by a 25-foot development setback and the protections afforded by SDC Section 4.3-117.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	PLO	LMI	TOTAL ACRES
S-25		.67	.67
*S-25 25/50-ft. Setback	.04	2.45	2.49
Total	.04	3.12	3.16

*A 339-ft segment of S-25 falls outside of the 50-ft protection of the stormwater WQLW program. This segment is protected by a 25-ft. setback.

About .67 acres of S-25 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 5 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the riparian corridor could be preserved or enhanced. A 50-foot

development setback is already required for the riparian area under SDC 4.3-115. No additional setback is proposed.

A 25-to-50-foot setback would affect 3.12 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under SDC Section 4.3-115.

Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in SDC 4.3-115.

Reduction in the Buildable Land Inventory:

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of commercial and industrial lands. The Springfield Residential Lands Study (RLS) that was also completed in 2009 identified a small surplus of residential lands. These inventories include some Glenwood sites and classified each as “Vacant,” or “Redevelopable.” These classifications are not the same used by the Lane County Assessor’s Office. These classifications stem from judgments made by ECONorthwest in collaboration with a steering committee that helped frame assumptions about what is redevelopable and vacant.

Protecting S-25 and its 25-50 foot setback area from future development effectively reduces the CIBL inventory by a total of 3.26 acres and the RLS by a total of 1.11 acres, for a total of 3.75 acres.

Impact of Recommended Protection on Commercial, Industrial and Residential Land Inventories

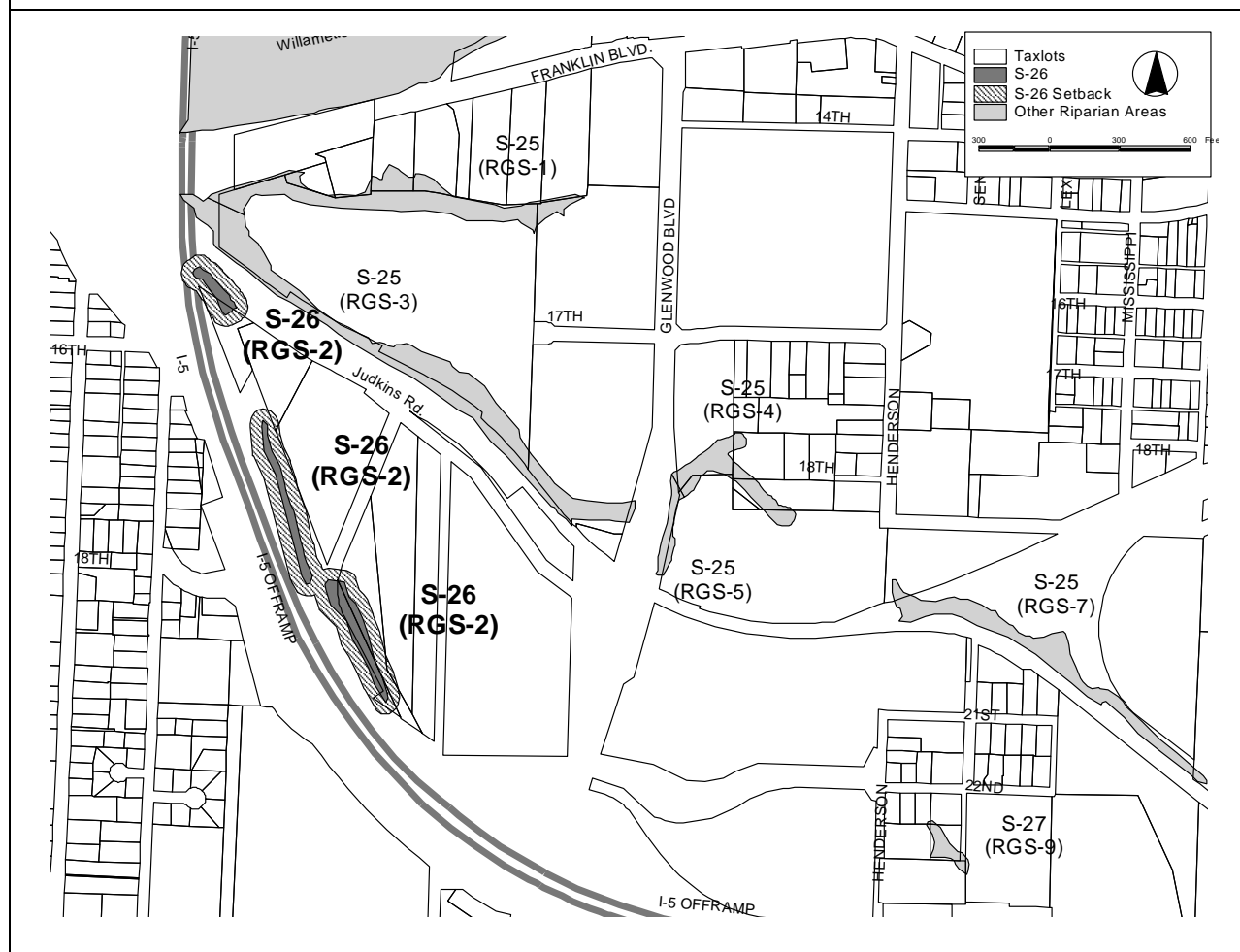
Site S-25 Zoning	Redevelopable	Vacant	Total Acres
LDR	.49		.49
LMI	2.15	1.11	3.26
Total Acres	2.64	1.11	3.75

The cumulative effect of fully protecting all commercial and industrial lands that are impacted by riparian or wetland resources could increase the need for UGB expansion to meet land needs.

A 50-foot development setback is already required under stormwater provisions of the Springfield Development Code, and thus 2.39 acres of the 3.75 acre impact of the setback is not attributed to this report.

Site: S-26 (RGS-2) Riverview/Augusta Channel	Associated Wetlands: W-23 Moderate Quality Wetlands	Acres: 1.56	WHA Score: 17-57 High Quality Resource Site
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Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. S-26 is associated with the Riverview-Augusta Channel. The channel is protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the channel also protects S-26. Any portion of S-26 not protected by the Riverview-Augusta Channel 50-foot setback should be protected by a 25-foot setback under the standards and protections found in SDC 4.3-117. S-26 is adjacent to but not directly connected to a locally significant wetland (W-23).



Description:

Site S-26 is a perennial stream that varies in width between 2-5 feet. It is bordered to the west by I-5. Much of the stream and the defined impact area are located within ODOT right-of-way adjacent to I-5 and beneath the Willamette I-5 Bridge.

S-26 is segmented, with a 462-foot culvert dividing the northern and southern segments of the stream. The northern segment of S-26 daylights under the Willamette I-5 Bridge before continuing north to the Willamette River. The left & right banks are similar but the average slope of the right bank is 10% and the impervious surface is between 10-25%. About 75% of both banks of S-26 are affected by development.

No known fish survey was been conducted for S-26. The stream is not shown on ODFW maps of fish-bearing streams. There is an unnamed perennial drainage that begins on the west side of I-5 (in Eugene) and is culverted under the freeway where it converges with the culverted portion of S-26. Oregon Department of Fish and Wildlife representative, Jeff Ziller, said this Eugene drainage that connects to S-26 has cutthroat trout. The presence of cutthroat in the Eugene drainage suggests that S-26 is also fish-bearing. The proximity and connectivity to the Willamette River also suggests that fish are present in S-26.

Observed Vegetation

Woody Vegetation		Herbaceous Vegetation	
<i>Fraxinus latifolia</i>	Oregon Ash	<i>Festuca arundinacea</i>	Tall Fescue
<i>Salix sitchensis</i>	Sitka Willow	<i>Plantago lanceolata</i>	English Plantain
<i>Cornus stolonifera</i>	Red-Osier Dogwood	<i>Daucus carota</i>	Queen Anne's Lace
<i>Rubus discolor</i>	Himalayan blackberry	<i>Aira caryophyllea</i>	Silver Hairgrass
<i>Populus trichocarpa</i>	Black Cottonwood	<i>Lathyrus sp.</i>	Wild Pea
<i>Robinia pseudoacacia</i>	Black Locust	<i>Cirsium arvense</i>	Canada Thistle
<i>Rubus armeniacus</i>	Armenian Blackberry	<i>mixed grasses (unidentified)</i>	
<i>Acer macrophyllum</i>	Oregon Maple	<i>Dipsacus sylvestris</i>	Common Teasel
<i>Salix lasiandra</i>	Pacific Willow	<i>Hypericum perforatum</i>	St. John's Wort
<i>Cytisus scoparius</i>	Scotch Broom	<i>Juncus effusus</i>	Common Rush
<i>Symphoricarpos albus</i>	Snowberry		

Wetland Vegetation

Trees/ Shrubs		Vines/ Herbs	
<i>Fraxinus latifolia</i>	Oregon Ash	<i>Mentha arvensis</i>	Field mint
<i>Salix sitchensis</i>	Sitka Willow	<i>Biden sp.</i>	Begger's tick.
<i>Cornus stolonifera</i>	Red-Osier Dogwood	<i>Juncus effusus</i>	Soft Rush
		<i>Carex leptopoda</i>	Short-Scale Sedge

Soils

Soils—Mapped Series	Chehalis silty clay loam
Hydrologic Source	Groundwater

Summary of Riparian Functional Assessment

Riparian ID	Reach Length	Stream Width	Riparian Width	Water Quality	Flood Management	Thermal Regulation	Wildlife Habitat
RGS-2	1,740	2-5 feet	40-75 ft.	M	M	H	M

Resource and Impact Area Summary

Resource Acreage:	1.56
Impact Area Acreage:	14.73
Combined Resource and Impact Area:	16.29
Vacant Acres within the Combined Area:	1.99
Parcels Affected (Including Impact Area):	8
Combined Parcel Acreage:	57.07

Conflicting Uses by Acre and Zoning District

SITE ID	LMI	*Right-of-Way	TOTAL ACRES
S-26	.57	.99	.57
S-26 Impact Area	5.12	9.61	5.12
Total	5.69	10.60	5.69

*Right-of-way does not typically have a zoning designation. As such, the right-of-way acreage shown for the conflicting use acreage is not counted towards the total. The right-of-way acreage is shown here because a large portion of the resource and its impact area are within ODOT and railroad right-of-ways.

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LMI	TOTAL ACRES
S-26	.52	.52
S-26 Impact Area	1.47	1.47
Total	1.99	1.99

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in SDC Sections 4.3-115 and 5.17-100? **Yes.**

S-26 is associated with the Riverview-Augusta Channel. The channel is protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the channel also protects S-26.

Site Specific ESEE Analysis for S-26

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

Although S-26 is highly disturbed, it achieved a WHA score that ranged between 17 for the northern segment to 57 for the southern segment. S-26 is rated overall as a high quality resource site, despite the low score for the northern segment. The northern segment has restoration potential and will likely receive attention as part of a larger riparian restoration project for the area disturbed by construction of the new Willamette I-5 Bridges.

The Riparian Functional Assessment conducted by Pacific Habitat Services indicated that the Water Quality, Flood Management and Wildlife Habitat functions were rated “Medium.” The Thermal Regulation function was rated “High.” Fully allowing additional conflicting uses would cause the loss of these functions.

Social Consequences

S-26 is located in an area that is heavily impacted by existing industrial development. The stream is not easily accessible to the public nor is it near a school. For these reasons it is not appropriate for educational or recreational uses. The Willamalane Park and Recreation District Comprehensive Plan shows no anticipated park facilities or natural areas near the resource site.

Economic Consequences

Fully allowing conflicting uses would mean the loss of the water quality, flood management, thermal regulation and wildlife habitat functions of S-26. These functions could be mimicked using engineered facilities at a significant cost. Fully protecting the resource site would mean the loss of 1.99 acres of vacant industrial land within the combined resource and impact area boundaries.

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of industrial lands. The majority of small sized commercial and industrial parcels needed for future growth shall be met within the existing UGB on small vacant and or redeveloped parcels. Protecting S-26 would reduce the available vacant industrial land within the UGB to meet these needs. The cumulative effect of fully protecting all commercial and industrial land that are impacted by riparian or wetland resources could increase the need for UGB expansion to meet land needs.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. S-26 is associated with the Riverview-Augusta Channel. The Riverview-Augusta Channel is protected by a 50-foot development setback described in SDC Section 4.3-115 and the site plan review standards described in SDC Section 5.17-100. This 50-foot setback protecting the channel also protects S-26. Any portion of S-26 not protected by the Riverview-Augusta Channel's 50-foot setback should be protected by a 25-foot setback under the standards and protections found in SDC 4.3-117.

If the setback afforded to S-26 by the existing Riverview-Augusta Channel protections is removed, a 25-foot setback should be applied to the stream under the standards and protections found in SDC 4.3-117.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LMI	TOTAL ACRES
S-26	.52	.52
S-26 50-ft. Setback	1.26	1.26
Total	1.78	1.78

About .52 acres of S-26 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 3 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the riparian corridor could be preserved or enhanced. A 50-foot development setback is already required for the riparian area under SDC Section 4.3-115. No additional setback is proposed by this study.

A 50-foot setback would affect 1.26 acres of vacant industrial land. The affect of the setback on buildable land could be reduced by aligning development such that side yards, stormwater swales and other required open space are within the setback. Stormwater management facilities required for development can be placed within the setback under SDC Section 4.3-115.

Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in SDC Section 4.3-115.

Reduction in the Buildable Land Inventory:

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of commercial and industrial lands. The Springfield Residential Lands Study (RLS) that was also completed in 2009 identified a small surplus of residential lands. These inventories include some Glenwood sites and classified each as “Vacant,” or “Redevelopable.” These classifications are not the same used by the Lane County Assessor’s Office. These classifications stem from judgments made by ECONorthwest in collaboration with a steering committee that helped frame assumptions about what is redevelopable and vacant.

Protecting S-26 and its 50 foot setback area from future development effectively reduces the CIBL inventory by a total of 1.3 acres.

Impact of Recommended Protection on Commercial, Industrial and Residential Land Inventories

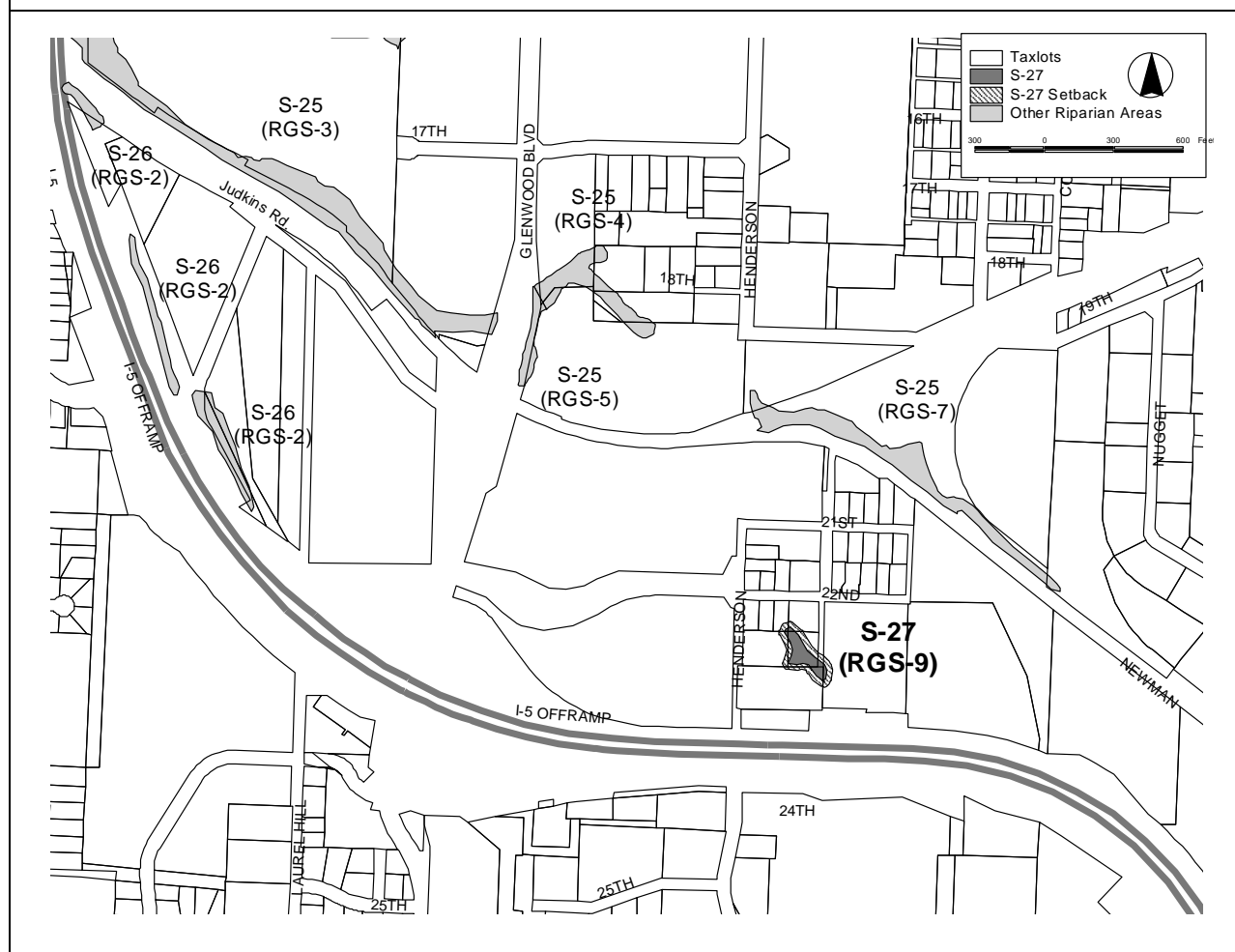
Site S-26 Zoning	Redevelopable	Vacant	Total Acres
LMI	0	1.3	1.3
Total Acres	0	1.3	1.3

The cumulative effect of fully protecting all commercial and industrial lands that are impacted by riparian or wetland resources could increase the need for UGB expansion to meet land needs.

A 50-foot development setback is required under stormwater provisions of the Springfield Development Code, and thus the 1.3 acre impact of protecting the resource and its setback is not attributed to this report.

Site: S-27 (RGS-9)	Associated Wetlands: None	Acres: .33	WHA Score: 45 High Quality Resource Site
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Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. Establish a 25-foot development setback and apply standards and protections found in SDC section 4.3-117. S-27 is not covered by any other existing riparian or wetland protection.



Description:

Site S-27 is a perennial stream segment that conveys water from the Moon Mt. area south of I-5. The stream is largely culverted from I-5 to the Glenwood slough, with occasional daylighting

along the watercourse. S-27 is one of those daylighted segments which opens into a 40 foot wide riparian feature. The stream segment is about 274 feet in length and is bounded to the north and west by industrial and residential development. Some land to the south and east is undeveloped, but the stream is culverted as it passes beneath that area.

S-27 is a dense thicket, dominated by willow species. At the time the stream was assessed (July 2009) the feature was sufficiently shrouded by vegetation that the consultants noted that they “could not see the bottom of the drainage due to a steep slope and *Salix* sp. thicket.”

No known fish survey was been conducted for S-27. It is not shown on ODFW maps of fish-bearing streams. The distance and lack of open connection to the Glenwood Slough and the Willamette River argue against this being classified as a fish-bearing stream.

Observed Vegetation

Woody Vegetation		Herbaceous Vegetation	
<i>Populus trichocarpa</i>	Black Cottonwood	<i>Dispsacus species</i>	Teasel
<i>Acer species</i>	Maple	<i>Fallopia japonica</i>	Knotweed
<i>Alnus species</i>	Alder		
<i>Calocedrus decurrens</i>	Cedar		
<i>Corylus species</i>	Hazelnut		
<i>Salix lasiandra</i>	Pacific Willow		
<i>Rubus armeniacus/discolor</i>	Blackberry		
<i>Hedera helix</i>	English Ivy		

Soils

Soils—Mapped Series	Bellpine silty clay loam
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Summary of Riparian Functional Assessment

Riparian ID	Reach Length	Stream Width	Riparian Width	Water Quality	Flood Management	Thermal Regulation	Wildlife Habitat
RGS-9	274 ft.	40 feet	35 ft.	M	M	H	M

Resource and Impact Area Summary

Resource Acreage:	.33
Impact Area Acreage:	3.57
Combined Resource and Impact Area:	3.90
Vacant Acres within the Combined Area:	2.24
Parcels Affected (Including Impact Area):	9
Combined Parcel Acreage:	8.16

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	LMI	TOTAL ACRES
S-27	.26	.07	.33
S-27 Impact Area			3.57
Total			3.90

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	LMI	TOTAL ACRES
S-27	.31	.06	.37
S-27 Impact Area	.21	2.03	2.24
Total	.52	2.09	2.61

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in SDC Sections 4.3-115 and 5.17-100? **No.**

Site Specific ESEE Analysis for S-27

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

With a WHA score of 45, S-27 is rated as a high quality resource site. The Riparian Functional Assessment prepared by Pacific Habitat Services rated the Water Quality, Flood Management, and Wildlife Habitat as Medium. The Thermal Regulation function was rated as High. Fully allowing additional conflicting uses would cause the loss of these functions.

Social Consequences

S-27 is located in an area that is heavily impacted by existing industrial development. The stream is not easily accessible to the public nor is it near a school. For these reasons it is not appropriate for educational or recreational uses. The Willamalane Park and Recreation District Comprehensive Plan shows no anticipated park facilities or natural areas near the resource site.

Economic Consequences

Fully allowing conflicting uses would mean the loss of the Water Quality, Flood Management, Thermal Regulation and Wildlife Habitat functions of S-27. These functions could be mimicked using engineered facilities at a significant cost. Fully protecting the resource site would mean

the loss of 2.61 acres of vacant land within the combined resource and impact area boundaries. It would cause the loss of about 2.09 acres of industrial land and about .52 acres of low density residential land.

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of industrial lands. The majority of small sized commercial and industrial parcels needed for future growth shall be met within the existing UGB on small vacant and or redeveloped parcels. Protecting S-27 would reduce the available vacant industrial land within the UGB to meet these needs. The cumulative effect of fully protecting all commercial and industrial land that are impacted by riparian or wetland resources could increase the need for UGB expansion to meet land needs.

The recently completed Springfield Residential Land and Housing Needs Study (2009) did not show the affected residential properties on its inventory of vacant residential lands that will be needed to accommodate future residential growth.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. Establish a 25-foot development setback from the resource and apply the standards and protections found in SDC Section 4.3-117.

The disturbed nature of the site and lack of open connectivity to the Glenwood Slough and the Willamette River reduces the likelihood that this is vital fish habitat. The site has other habitat values and the existing vegetation provides a valued thermal regulation function. The 25-foot development setback would not substantially reduce those functions and would allow some nearby development to meet industrial and residential needs.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	LMI	TOTAL ACRES
S-27	.25	.06	.31
S-27 25-ft. Setback	.38	.22	.60
Total	.63	.28	.91

About .31 acres of S-27 is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 6 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the essential functions of the riparian corridor could be preserved or enhanced.

A 25-foot setback would affect .22 acres of vacant industrial land and .38 acres of low density residential land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space are within the setback. Stormwater management facilities required for development can be placed within the setback under SDC Section 4.3-115.

Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in SDC Section 4.3-115.

Reduction in the Buildable Land Inventory:

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of commercial and industrial lands. The Springfield Residential Lands Study (RLS) that was also completed in 2009 identified a small surplus of residential lands. These inventories include some Glenwood sites and classified each as “Vacant,” or “Redevelopable.” These classifications are not the same used by the Lane County Assessor’s Office. These classifications stem from judgments made by ECONorthwest in collaboration with a steering committee that helped frame assumptions about what is redevelopable and vacant.

Protecting S-27 and its 25 foot setback area from future development effectively reduces the CIBL inventory by a total of .19 acres and the RLS by a total of .38 acres, for a total of .57 acres.

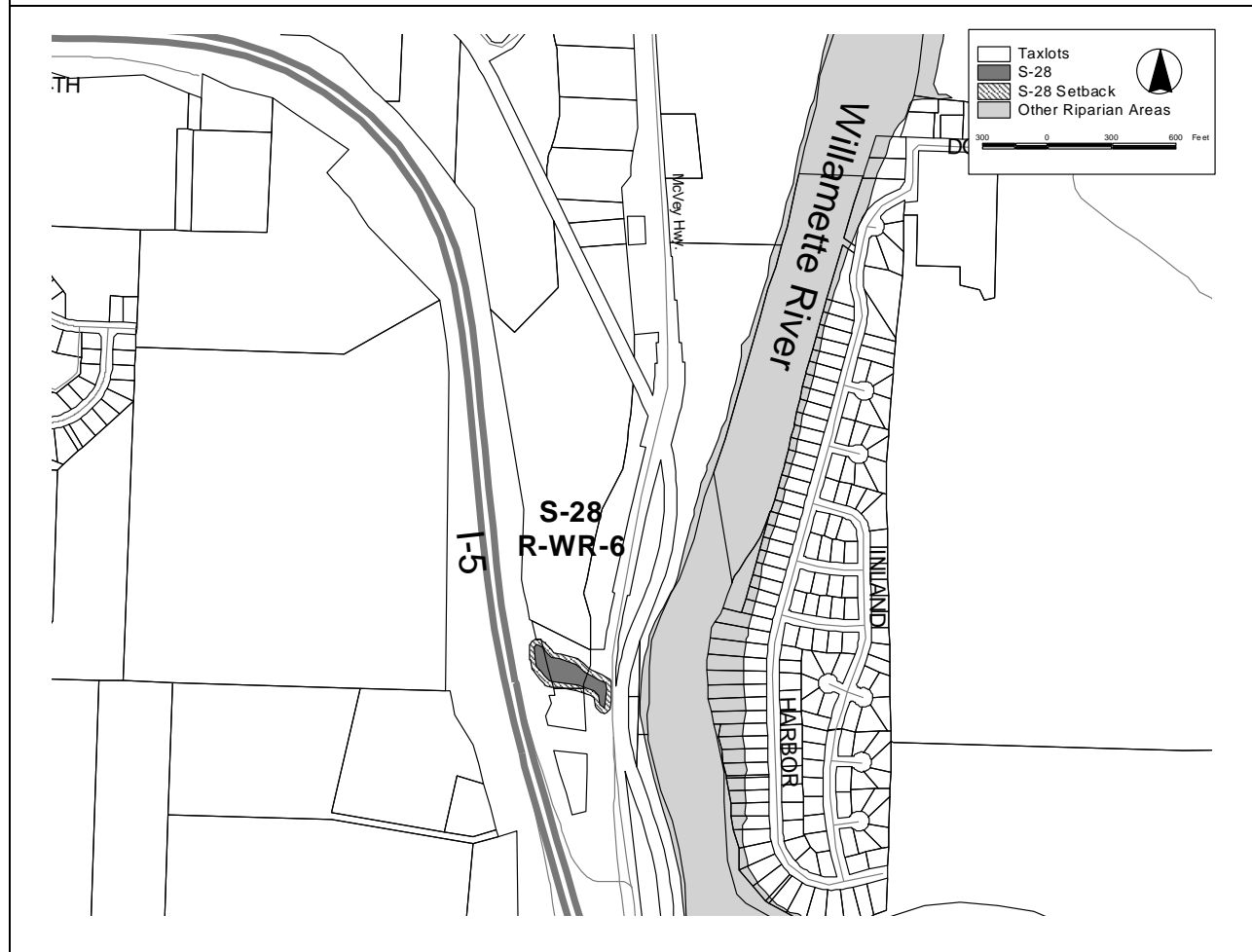
Impact of Recommended Protection on Commercial, Industrial and Residential Land Inventories

Site S-27 Zoning	Redevelopable	Vacant	Total Acres
LDR	.38	0	.38
LMI	.13	.06	.19
Total Acres	.51	.06	.57

The cumulative effect of fully protecting all commercial and industrial lands that are impacted by riparian or wetland resources could increase the need for UGB expansion to meet land needs.

Site:	Associated Wetlands:	Acres:	WHA Score:
S-28	W-24	.73	61
(R-WR-6)	Moderate Quality Wetlands		High Quality Resource Site

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. Establish a 25-foot development setback and apply standards and protections found in SDC section 4.3-117. S-28 is not covered by any other existing riparian or wetland protection.



Description:

S-28 is a narrow stream that meanders through a wetland area that is vegetated by willow thickets and Reed Canary grass. It is sandwiched between the ODOT right-of-ways for the I-5 and McVay Hwy. The system is fed by a storm culvert from under the freeway and exits through a storm culvert under McVay Hwy. and into the Willamette River.

Observed Vegetation

Woody Vegetation		Herbaceous Vegetation	
<i>Fraxinus latifolia</i>	Oregon Ash	<i>Festuca arundinacea</i>	Tall Fescue
<i>Pseudotsuga mensiesii</i>	Douglas Fir	<i>Equisetum arvense</i>	Field Horsetail
<i>Cornus stolonifera</i>	Red-Osier Dogwood	<i>Phalaris arundinacea</i>	Reed Canary Grass
<i>Rubus discolor</i>	Himalayan Blackberry		
<i>Populus trichocarpa</i>	Black Cottonwood		
<i>Acer macrophyllum</i>	Oregon Maple		
<i>Oemleria cerasiformis</i>	Indian Plum		
<i>Quercus Garryana</i>	White Oak		
<i>Hedera helix</i>	English Ivy		

Native and non-native vegetation were distributed throughout the reach and wetland. Reed Canary grass is starting to overtake the wetland area. There is a thick canopy with cottonwoods, maples and willows. Lots of Oak trees and Ash were visible just outside the area with a scattering in the site.

Wetland Vegetation

Dominant Wetland Vegetation			
Trees/ Shrubs		Vines/ Herbs	
<i>Populus trichocarpa</i>	Black Cottonwood	<i>Phalaris arundinacea</i>	Reed Canary Grass
<i>Salix lasiandra</i>	Pacific Willow	<i>Oenanthe sarmentosa</i>	Water-Parsley
<i>Cornus stolonifera</i>	Red-Osier Dogwood	<i>Urtica dioica</i>	Stinging Nettles
		<i>Carex obnupta</i>	Slough Sedge
		<i>Equisetum arvense</i>	Field Horsetail

Soils

Soils—Mapped Series	Dixonville-Philomath-Hazelair complex
Hydrologic Source	Groundwater

Summary of Riparian Functional Assessment

Riparian ID	Reach Length	Stream Width	Riparian Width	Water Quality	Flood Management	Thermal Regulation	Wildlife Habitat
R-WR-6	331 feet	2-3 feet	120 feet	H	H	H	M

Resource and Impact Area Summary

Resource Acreage:	.73
Impact Area Acreage:	5.04
Combined Resource and Impact Area:	5.77
Vacant Acres within the Combined Area:	.39
Parcels Affected (Including Impact Area):	5
Combined Parcel Acreage:	36.35

Conflicting Uses by Acre and Zoning District

SITE ID	LDR	PLO	*Right-of-Way	TOTAL ACRES
S-28	.41	0	.32	.41
S-28 Impact Area	1.24	.6	3.20	1.84
Total	1.65	.6	3.52	2.25

*Right-of-way does not typically have a zoning designation. As such, the right-of-way acreage shown for the conflicting use acreage is not counted towards the total. The right-of-way acreage is shown here because a large portion of the resource and its impact area are within ODOT and railroad right-of-ways.

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	LDR	PLO	*Right-of-Way	TOTAL ACRES
S-28	0	0	0	0
S-28 Impact Area	0	.39	0	.39
Total	0	.39	0	.39

*Right-of-Way does not typically have a zoning designation. As such, the Right-of-Way acreage shown for the conflicting use acreage is not counted towards the total.

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in SDC Sections 4.3-115 and 5.17-100? **No.**

The Glenwood Refinement Plan includes policies that give direction for environmental design affecting S-28. The Refinement Plan states, "Significant wetland areas in Glenwood shall be protected from encroachment and degradation in order to retain their important functions and

values related to fish and wildlife habitat, flood control, sediment, and erosion control, water quality control, and ground water pollution control,” (Policy 1, pg. 92, Environmental Element).

Site Specific ESEE Analysis for S-28

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

With a WHA score of 61, S-28 is rated as a high quality resource site. Much of S-28 includes inventoried a locally significant wetland (W24). The Riparian Functional Assessment prepared by Pacific Habitat Services rated the Water Quality, Flood Management, and Thermal Regulation functions as High. The Wildlife Habitat function was rated Medium.

The wetland’s water quality and hydrologic control functions are impacted or degraded. The resource provides habitat for some species, but the OFWAM analysis concludes that it does not provide a diverse wildlife habitat.

Fully allowing additional conflicting uses would cause the loss of these riparian and wetland functions.

Social Consequences

S-28 is isolated and not easily accessible to the public. It is not near a school. The Willamalane Park and Recreation District Comprehensive Plan shows no anticipated park facilities or natural areas near the resource site. For these reasons it is not appropriate for educational or recreational uses.

Economic Consequences

Fully allowing conflicting uses would mean the loss of the water quality, flood management, and thermal regulation and wildlife habitat functions that are provided by S-28. These functions could be mimicked using engineered facilities at a significant cost. Fully protecting the resource site would mean the loss of .39 acres of vacant Public Land and Open Space within the combined resource and impact area boundaries.

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 did not identify S-28 as providing needed commercial or industrial land. The Springfield Residential Land and Housing Needs Study (2009) did not show the affected residential properties on its inventory of vacant residential lands that will be needed to accommodate future residential growth.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the watercourse. Establish a 25-foot development setback from the resource and apply the standards and protections found in SDC Section 4.3-117.

The small stream width lack of open connectivity to the Willamette River reduces the likelihood that this is vital fish habitat. The site has other habitat values and the existing vegetation provides a valued thermal regulation function. The 25-foot development setback would not substantially reduce those functions and would allow some future redevelopment to meet residential needs.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	LDR	PLO	TOTAL ACRES
S-28	0	0	0
S-28 25-ft. Setback	0	0	0
Total	0	0	0

None of the zoned acreage within the resource site or the 25-foot setback for S-28 is classified as vacant by the Lane County Assessor's Office. Fully protecting the resource would restrict the redevelopment of about .35 acres of low density residential land for additional housing on the site.

Reduction in the Buildable Land Inventory:

The Commercial Industrial Buildable Lands Study (CIBL) that was completed in 2009 identified a shortage of commercial and industrial lands. The Springfield Residential Lands Study (RLS) that was also completed in 2009 identified a small surplus of residential lands. These inventories include some Glenwood sites and classified each as "Vacant," or "Redevelopable." These classifications are not the same used by the Lane County Assessor's Office. These classifications stem from judgments made by ECONorthwest in collaboration with a steering committee that helped frame assumptions about what is redevelopable and vacant.

Protecting S-28 and its 25-foot setback area from future development effectively reduces the CIBL inventory by a total of .29 acres and the RLS by a total of .38 acres, for a total of .67 acres.

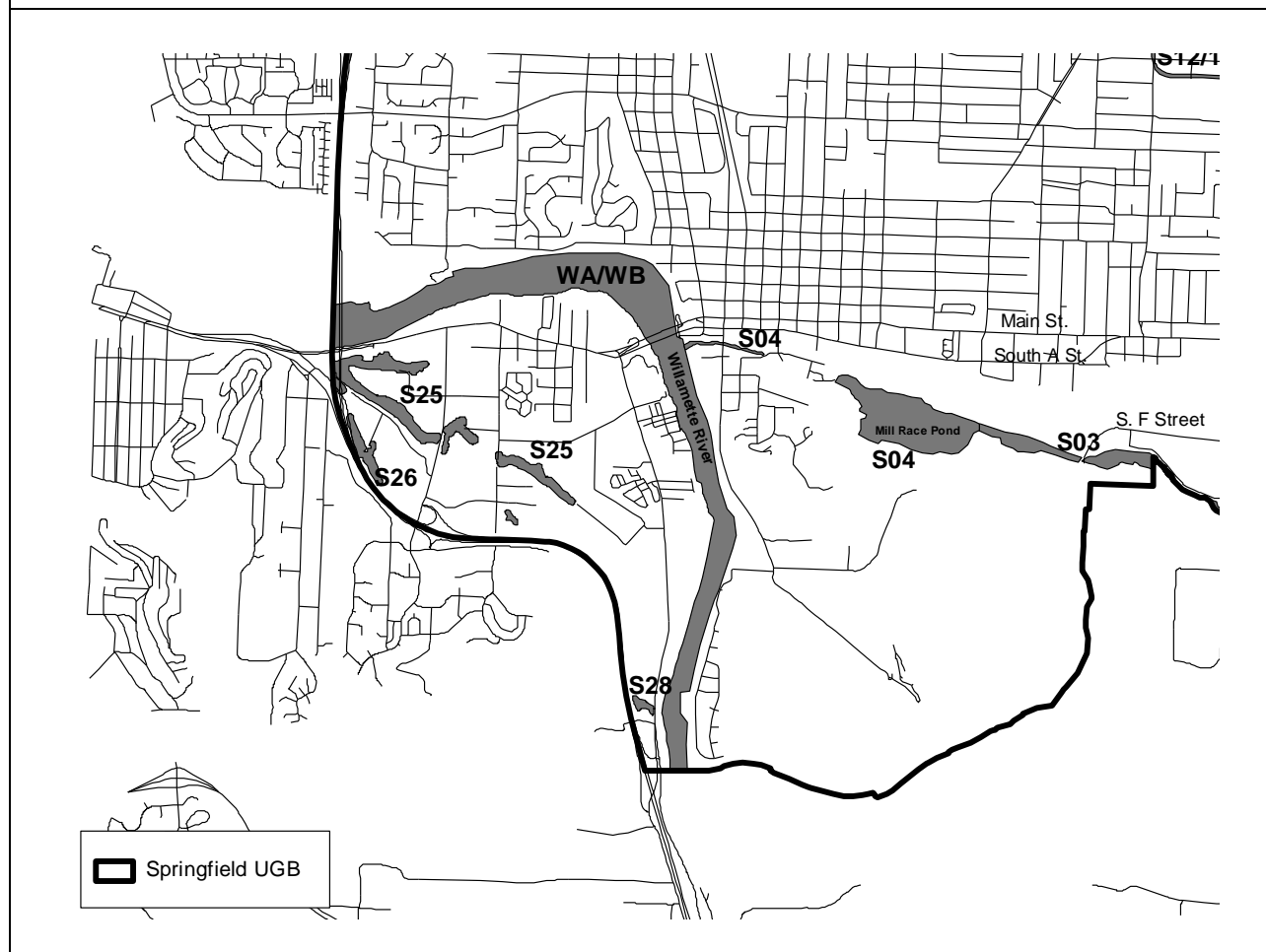
**Impact of Recommended Protection on
Commercial, Industrial and Residential Land Inventories**

Site S-28 Zoning	Redevelopable	Vacant	Total Acres
LDR	.38	0	.38
LMI	.13	.16	.29
Total Acres	.51	.16	.67

The cumulative effect of fully protecting all commercial and industrial lands that are impacted by riparian or wetland resources could increase the need for UGB expansion to meet land needs.

Site	Listed LWI	Acres	WHA Score	Springfield Waterways Channel Assessment:
WA/WB Willamette River	Locally Significant Wetlands (W04a) High Quality Wetlands	22.13 Within the UGB	Natural: 72-74, Urban: 64-66 High Quality Resource Site	Not Assessed

Goal 5 Recommendation: Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. The Willamette River (WA/WB) is a water quality limited watercourse and is protected by a 75-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary. The documented presence of a state and federally listed specie requires coordination with the Oregon Department of Fish and Wildlife and appropriate federal agencies to determine what (if any) additional measures may be needed.



Description:

The Willamette River WA (Natural) is one of the most important environmental aesthetic and cultural features of the Eugene-Springfield metropolitan area. This site includes all of the natural riparian areas along the banks of the Willamette River within the urban growth boundary. The

riparian areas included within WA are wider, healthier and have a greater structural diversity than other areas along the river. The area near the Alton Baker Park-Eastgate Woodlands is an example of this type of riparian area.

The Willamette is a major river system and it is habitat for spring Chinook salmon, which is listed as threatened under the federal ESA. The riparian vegetation along the Willamette includes black cottonwood, Oregon ash, Pacific willow (*Salix lasiandra*), willow (*Salix* spp.), creek dogwood, red alder, white alder, and bigleaf maple. Reed canarygrass, rush species (*Juncus* spp., *Scirpus* spp.) and sedge species (*Carex* spp.) occur along the waterline. Belted kingfisher, great blue heron, green-backed heron, and osprey are commonly seen fishing and perching along the River. Swallows and warbler species frequent the riparian edge in spring and summer. Shorebirds, beaver, nutria, turtles and reptile species utilize the water's edge and downed trees. The river functions as a migration route and travel corridor for many wildlife species. The Willamette River in Eugene and Springfield harbors a diverse fish community, including: cutthroat trout, rainbow trout, mountain whitefish, spring chinook salmon, chiselmouth, mountain sucker, largescale sucker, redbelt shiner, sculpin, northern pikeminnow, peamouth, sand roller, dace, largemouth bass, smallmouth bass, and common carp (Chip Andrus, Waterworks Consulting, 2000, prepared for the City of Eugene Public Wastewater Division).

The urban segments of the Willamette River (WB) have narrow strips of riparian vegetation adjacent to commercial and residential development. In some cases, development extends to the very edge of the riverbank. These areas have the same types of vegetation and wildlife as the more natural areas, only in lesser quantities. These more urban stretches are nevertheless important as wildlife habitat because of the travel corridor function of the river's edge and their function as a buffer between urban uses and the river itself. They are also important for their aesthetic value, their role in protecting riverbanks from erosion and for their role in supporting fish populations.

The Willamette River directly or indirectly (via the McKenzie) receives nearly all of the Springfield metropolitan area stormwater runoff. Riparian areas are important in part because they filter out pollutants from stormwater before they reach the river.

Resource and Impact Area Summary

Resource Acreage:	22.13
Impact Area Acreage:	72.89
Combined Resource and Impact Area:	95.02
Vacant Acres within the Combined Area:	39.79
Number of Parcels Affected:	155
Combined Parcel Acreage:	423.16

Conflicting Uses by Acre and Zoning District

SITE ID	BK	CC	GO	HI	LDR	LMI	MDR	PLO	TOTAL ACRES
WA/WB	0	2.78	.16	1.03	7.37	2.24	.16	8.39	22.13
WA/WB	.08	6.76	1.37	3.09	34.28	16.48	1.51	9.32	72.89

SITE ID	BK	CC	GO	HI	LDR	LMI	MDR	PLO	TOTAL ACRES
Impact Area									
Total	.08	9.54	1.53	4.12	41.65	18.72	1.67	17.71	95.02

Conflicting Uses by Vacant Acre and Zoning District

SITE ID	BK	CC	GO	HI	LDR	LMI	MDR	PLO	TOTAL ACRES
WA/WB	0	2.78	0	0	2.49	.86	0	6.95	13.08
WA/WB	0	4.95	0	0	11.1	3.4	0	7.26	26.71
Impact Area									
Total	0	7.73	0	0	13.59	4.26	0	14.21	39.79

Existing Protections

Is the site protected by minimum development setbacks and site plan review standards described in 31.240 of the Springfield Development Code? **Yes**

WA and WB are the natural and urban segments of the Willamette River. The Willamette is a water quality limited watercourse with a rate of flow of more than 1000 cubic feet per second. The river is protected by a 75-foot development setback and a site plan review requirement.

Site Specific ESEE Analysis for WA/WB

This section discusses ESEE impacts that are specific to this particular site. For a broader discussion of the ESEE consequences of allowing, limiting or prohibiting conflicting uses on wetlands, see the General ESEE Analysis found in Section 8 of this report.

Environmental Consequences

The natural segment WA, received a WHA score of 72-74. The urban segments scored 64-66. These scores make the Willamette River one of the most highly ranked resource sites within Springfield's inventory. WA/WB provides diverse wildlife habitat. It is habitat for state and federally listed fish and herptile species within Springfield's planning jurisdiction. Fully allowing conflicting uses along the length of the River would mean the loss of large segments of habitat function in areas where zoning allows for industrial, commercial and residential development. Some sections of WA/WB are zoned as public land and open space. Some park development, especially community parks that promote lawns and open area to the river edge, can degrade the river's habitat function. Where park and public lands are planned passive recreation and natural park use, the habitat function can be preserved.

Social Consequences

The Willamette River is a focal point in Springfield for recreational and cultural uses. Alton Baker, Eastgate Woodlands, Island Park and Dorris Ranch are all park sites along the Willamette that provide recreational opportunities for Springfield residents. Fully allowing conflicting uses would mean the degradation of the resource these purposes if the segments zoned for public land and open space were developed as highly improved parks or other public uses with large areas of impervious surfaces and manicured lawns and landscaping to the river's edge.

Economic Consequences

Just as there are large tracts of public land along the river, there are also large tracts of privately held industrial, commercial and residential lands. Fully protecting these parcels from conflicting uses would mean the loss of 39.79 acres of vacant land within the resource and impact area boundaries. Limiting conflicting uses could allow development using low impact design techniques while preserving the majority of the resource functions and habitat values.

Energy Consequences

None of note.

Recommended Program for Protection

Limit conflicting uses and employ low impact development practices when developing within 150 feet of the resource site. The Willamette River (WA/WB) is a water quality limited watercourse and is protected by a 75-foot development setback and site plan review standards described in 31.240 of the Springfield Development Code. No additional setbacks are necessary. The documented presence of a state and federally listed species requires coordination with the Oregon Department of Fish and Wildlife and appropriate federal agencies to determine what (if any) additional measures may be needed.

Impact of Protection Measures on Vacant Acreage and Buildable Land Inventory

Impact on Vacant Acreage by Zoning District

SITE ID	CC	LDR	LMI	PLO	TOTAL ACRES
WA/WB	2.78	2.49	.86	6.95	13.08
WA/WB 75-ft. Setback	2.60	4.97	1.26	3.09	11.92
Total	5.38	7.46	2.12	10.04	25.00

About 13.08 acres of WA/WB is classified as vacant by the Lane County Assessor's Office. The vacant acreage includes portions of 28 lots. Limiting conflicting uses would allow some development to occur within the riparian resource area where the developer could show how the

essential functions of the resource area could be preserved or enhanced. A 75-foot development setback is recommended.

A 75-foot setback would affect 11.92 acres of vacant commercial, residential, industrial and public land. The affect of the setback on buildable land could be reduced by aligning development such that yards and other open space that is within the setback. Stormwater management facilities required for development can be placed within the setback under Article 31.240.

Employing low impact development practices within 150 feet of the riparian area could reduce the impact of nearby development on the resource. Some low impact development practices are already incorporated into the stormwater quality protection standards found in Article 31.

Reduction in the Buildable Land Inventory:

The resource, WA/WB was not counted in the inventory of buildable lands by the Eugene-Springfield Metropolitan Area Residential Land and Housing Study. Therefore the fully protecting the riparian acreage would not reduce the inventory. As mentioned above, the 75-foot development setback may affect about 11.92 acres, however this area can be incorporated into the overall development without a significant loss of buildable area.

10.0 Program Decision and Program for Protection

OAR 660-23-010 requires the consideration of three basic options for programs to carry out the results of the ESEE analysis: (1) protect the resource site; (2) allow conflicting uses completely; or (3) allow conflicting uses on a limited basis. The City may choose to apply any one of these options to any one of the inventoried wetland and riparian sites. These options are briefly defined below.

Protect the Resource Site - Conflicting Uses Prohibited

Where the ESEE consequences of *fully* protecting have been determined to be acceptable to the governing body, there may be a decision to preserve a resource site as an undisturbed natural area. Such a resource site would be completely off limits to any conflicting land use or activity - including passive recreational use. This report does not recommend full protection for any locally significant wetland or riparian resource area.

Allow Conflicting Uses Completely - Regardless of Impacts on Resource Site

Fully allowing conflicting uses means that none of the locally significant wetlands or riparian areas would be preserved. In most cases, this extreme approach is unnecessary, because locally significant wetlands can be largely preserved while allowing conflicting uses on a given parcel.

There may be a few instances where one or more of Springfield's wetland or riparian resources must be removed in order to allow a conflicting use. Such limited protection (see below) sacrifice is justified where the ESEE consequences of preserving even a portion of the resource site are so severe as to allow conflicting uses fully, which has the effect of removing the resource from the local wetland or natural resource inventories. In such cases, there would be no local protection, although the Division of State Lands and or the US Army Corps of Engineers would retain jurisdiction.

Allow Conflicting Uses on Limited Basis - Partially Protect the Resource Site

Allowing conflicting uses on a limited basis means some development would be allowed where the ESEE analysis warrants such development to balance the consequences of fully protecting a site. The goal would be to retain a majority of the resource site and its function, while allowing some conflicting development. The "limit" option may include partial, in extreme instances, full elimination of a resource area or its development setback where such action is justified by the ESEE. This report does not recommend full elimination of any resource site.

10.1 Recommended Program Decision

This report recommends protecting Springfield's wetland and riparian resource sites by adopting a policy of allowing some conflicting land uses to impact resource sites where the loss (or partial loss) of the resource area is justified by the ESEE findings. This policy of "limiting conflicting uses" may be achieved in one of two ways: first, resource areas or their recommended setbacks areas may be reduced in size; or second, certain conflicting uses may be allowed provided that

impacts from the conflicting use are reduced. The Goal 5 protection program suggested below combines these two approaches.

10.2 Protection Program Overview

As mentioned above, the ESEE analysis must consider the consequences of full resource protection, allowing conflicting uses fully, and allowing conflicting uses on a limited basis. For the ESEE analysis to be meaningful, further definition of “allowing conflicting uses on a limited basis” is required. The following section outlines a recommended approach to implementing a protection program that limits conflicting uses. The basic features of this approach include:

1. The recommended Goal 5 limited protection program is based in part of on Springfield’s existing Stormwater Management policies detailed in SDC 4.3-110/115 and in particular those provisions which support the City’s response to state and federal regulations concerning surface and subsurface discharging stormwater management systems.
2. Establishment of 25-foot development setbacks from wetlands and riparian resource sites that are not already protected by larger development setbacks. Setbacks of 50 and 75 feet would be retained where they are already established by Springfield’s Stormwater Quality Management Program to protect water quality limited watercourses.
3. Site plan review would be required for all commercial, industrial and multi-family residential development within 150-feet of resource sites. SDC SDC 4.3-110/115 describes wetland and riparian protections that are applied in the site plan review process that help reduce the impact of development. This requirement coincides with the defined 150-foot impact area recommended by this study and the 150-foot site plan review area already required many of Springfield’s resource areas by the City’s Stormwater Quality Management Program. Construction of a single-family home within an existing subdivision would not require site plan review.
4. Future adoption and implementation of a Low Impact Development Design Handbook to reduce the impact of development on nearby wetlands and riparian areas. As mentioned above, SDC 4.3-110/115 already provides some protection for resource areas. A Low Impact Development Design Handbook would supplement the existing protections. The Low Impact Design Handbook will be jointly developed by the planning and public works staff using resources that have been in use in other communities as a starting point.
5. The Low Impact Design Handbook will include a compilation of design standards that are practical, cost efficient and flexible to enough to meet a variety of development situations. The National Homebuilders Association generally supports low impact design techniques, citing the reduced cost of infrastructure that has been achieved as well as the increased value of home sites which have natural amenities. Low impact design standards would be applied through the site plan review process mentioned above, where a proposed development or land division is within 150-feet of a resource site.

6. The protection program would primarily affect vacant land and future development. Existing uses and structures within the proposed 25-foot setbacks would be allowed to continue. Expansion of such uses would be permitted outside the setback. Development within 50 and 75-foot setbacks established under Springfield's Stormwater Quality Management Program would be subject to the policies of that program.
7. Where the proposed 25-foot setback renders a property unbuildable for the purposes for which it was zoned, a hardship variance may be requested to assist the owner to achieve a viable development design.

10.3 Protection Program Details

The following section provides more policy detail for how a “limiting conflicting uses.” The standards below are adapted from the model wetland and riparian protection ordinances published in the handbooks for wetland and riparian planning by the Oregon Division of State Lands. The standards and policies below would form the basis for an implementing ordinance that would be adopted by the City.

Protection Standards

I. Allowed Activities within Wetland and Riparian Resource Area Boundaries

- A. Any use, sign, or structure, and the maintenance thereof, that were lawfully existing when these protection were adopted, is allowed to continue within a wetland or riparian protection area. Such use, sign, or structure may continue at a similar level and manner as existed on the date of adoption of these protections. The maintenance and alteration of pre-existing ornamental landscaping is allowed within a wetland or riparian protection area so long as no additional native vegetation is disturbed. The provisions of this section shall not be affected by any change in ownership of properties containing a wetland or riparian protection area.
- B. The following activities and maintenance thereof are allowed within a wetland or riparian protection area, provided that any applicable state or federal permits are secured:
 - 1) Wetland and or riparian restoration and rehabilitation activities.
 - 2) Restoration and enhancement of native vegetation, including the addition of canopy trees.
 - 3) Cutting and removal of trees that pose a hazard to life or property due to threat of falling.
 - 4) Perimeter mowing and other cutting necessary for hazard prevention.
 - 5) Removal of non-native vegetation, if replaced with native plant species at a similar coverage or density so that native species dominate.
 - 6) Normal farm practices such as grazing, plowing, planting, cultivating and harvesting, that meet the following criteria and limitations:

- a. The farm practices were in existence or occurring on the property on the date of adoption of the provisions herein,
 - b. The farm practices are of no greater scope or intensity than the operations that were in existence on the date of adoption of the provisions herein, and
 - c. Normal farm practices do not include new or expanded structures, roads, or other facilities involving placement of fill material, excavation, or new drainage measures; and
- 7) Maintenance of existing drainage ways, ditches, or other structures, to maintain flow at original design capacity and mitigate upstream flooding, provided that management practices avoid sedimentation and impact to native vegetation and any spoils are placed in uplands.
 - 8) Waterway restoration and rehabilitation activities such as channel widening, realignment to add meanders, bank grading, terracing, reconstruction of road crossings, or water flow improvements.
 - 9) Maintenance and expansion of existing well fields and the establishment of new well fields to provide drinking water. This includes accessways to service wellheads and pipe lines for distributing water.
 - 10) Replacement of a permanent, legal, nonconforming structure in existence on the date of adoption of this ordinance with a structure on the same building footprint, if it does not disturb additional area, and in accordance with the provisions of Article 5 of the Springfield Development Code.
 - 11) Expansion of a permanent, legal, nonconforming structure in existence on the date of adoption of this ordinance, if the expansion area is not within and does not disturb the wetland protection area, and in accordance with the provisions of Article 5 of the Springfield Development Code.
 - 12) Emergency stream bank stabilization to remedy immediate threats to life or property. (State or federal emergency authorization may be needed for in-stream work.)
 - 13) Maintenance and repair of existing roads and streets, including repaving and repair of existing bridges, and culverts, provided that such practices avoid sedimentation and other discharges into the wetland or waterway.
- C. New fencing may be allowed by the Planning Director or the Director's designee where the applicant demonstrates that the following criteria are satisfied:
- 1) The fencing does not affect the hydrology of the site;

- 2) The fencing does not present an obstruction that would increase flood velocity or intensity;
- 3) Fish habitat is not adversely affected by the fencing;
- 4) The fencing is the minimum necessary to achieve the applicant's purpose;

Applications for new fencing within a wetland protection area shall contain a scale drawing that clearly depicts the wetland and wetland buffer area boundary.

II. Allowed Activities within Wetland and Riparian Development Setback Areas

Provided any required state or federal permits are secured, the following uses are allowed within the wetland and riparian buffers authorized in the Comprehensive Plan:

- A. Docks, boat shelters, piers, boat ramps, and similar water dependent uses;
- B. Utilities including but not limited to water, wastewater, stormwater, electrical facilities, natural gas facilities, telecommunications or other public improvements;
- C. Streets, roads, or bridges where necessary for access or crossings;
- D. Bioswales or similar water quality improvement projects;
- E. Public multi-use paths, access ways, trails, picnic areas, or interpretive and educational displays and overlooks, including benches and outdoor furniture;
- F. Wetland and riparian restoration.

III. Prohibited Activities within Wetland and Riparian Resource Areas

The following activities are prohibited within a wetland protection area, except as allowed in Sections I "Allowed Activities within Wetland and Riparian Resource Areas" and Section II "Allowed Activities within Wetland and Riparian Development Setback Areas":

- A. Placement of new structures or impervious surfaces.
- B. Excavation that is not related to maintenance of a drainage way (see Section I (B)(7)), drainage, grading, fill, or removal of vegetation except for fire protection purposes or removing hazard trees.
- C. Expansion of areas of landscaping with non-native species, such as a lawn or garden, into the wetland or riparian protection area.
- D. Disposal or temporary storage of refuse, yard debris, or other material.

- E. Discharge or direct runoff of untreated stormwater.
- F. Uses not allowed in the list of permitted uses for the underlying zone.
- G. Any other activities not identified in Sections I and II.

IV. Conservation and Maintenance of Wetland and Riparian Protection Areas

When approving applications for Land Divisions, Site Plans, Master Plans, Discretionary Use Permits, and Variances, or for development permits for properties containing a wetland or riparian protection area or portion thereof, the City shall assure long term conservation and maintenance of the wetland or riparian protection area through one or more of the following methods:

- A. The area shall be protected in perpetuity by a conservation easement recorded on deeds and plats prescribing the conditions and restrictions set forth in Sections I through III, and any imposed by state or federal permits; or
- B. The area shall be protected in perpetuity through ownership and maintenance by a private nonprofit association and through a conservation easement or through conditions, covenants, or restrictions (CC&Rs), prescribing the conditions and restrictions set forth in Sections I through III, and any conditions imposed by state or federal permits; or
- C. The area shall be transferred by deed to a willing public agency or private conservation organization with a recorded conservation easement prescribing the conditions and restrictions set forth in Sections I through III, and any conditions imposed by state or federal permits; or

Note: Other mechanisms for long-term protection and maintenance as deemed appropriate and acceptable by the City Attorney could be added to this list. Such mechanisms should be consistent with the purposes and requirements of this ordinance.

IV. Notification and Coordination with State Agencies

- A. Springfield staff shall notify the Oregon Division of State Lands in writing of all applications to the City for development activities - including development applications, building permits, and other development proposals - that may affect any wetland or riparian areas identified in the Springfield Local Wetlands Inventory or the Springfield Inventory of Natural Resources Map. This applies for both significant and non-significant wetlands and riparian corridors. The Division provides a Wetland Land Use Notification form for this purpose. [See OAR 660-23-100(7); ORS 227.350 for cities and ORS 215.418 for counties.]
- B. When reviewing wetland and riparian development permits, the City shall consider recommendations from the Oregon Department of Fish and Wildlife regarding OAR 635-415 "Fish and Wildlife Habitat Mitigation Policy." Note: recommendations from ODFW are advisory only.

V. Variances

- A. The Planning Commission or Hearings Officer shall be the approving authority for applications for variances to the wetland and riparian protection provisions contained in Section I through III above. The procedures of Article 11 of the Springfield Development Code shall be followed for approval of a variance except that the variance criteria of this section shall also apply.
- B. Mapping Error Variances and Corrections. The Planning Director or the Director's designee may correct the location of a wetland or riparian boundary when it has been demonstrated by a property owner or developer that a mapping error has occurred and the error has been verified by the DSL. Wetland delineations verified by DSL shall be used to automatically update and replace Springfield's Local Wetland Inventory mapping. No formal variance application or plan amendment is needed for map corrections where approved delineations are provided. If the map correction alters the significance or ESEE findings, a plan amendment may be necessary.
- C. Hardship Variances. The Planning Commission or Hearings Officer may grant a variance to the provisions of this ordinance only when the applicant has shown that all of the following conditions exist:
 - 1) Through application of this ordinance, the property has been rendered not buildable;
 - 2) The applicant has exhausted all other options available under to relieve the hardship;
 - 3) The variance is the minimum necessary to afford relief;
 - 4) No significant adverse impacts on water quality, erosion, or slope stability will result from approval of this hardship variance, or these impacts have been mitigated to the greatest extent possible; and
 - 5) Loss of native vegetative cover shall be minimized.
- D. Reduction or Deviation of Wetland and Riparian Development Setbacks. A request to vary the setback area, such as averaging of setback width, may be submitted for consideration by the Planning Director or the Director's designee. Such a request may be approved only if equal or better protection of the wetland or riparian area will be ensured through a plan for restoration, enhancement, or similar means. Such a plan shall be submitted to the Oregon Department of Fish and Wildlife for a mitigation recommendation pursuant to OAR 635-415 "Fish and Wildlife Habitat Mitigation Policy." In no case shall activities prohibited in Section III "Prohibited Activities Within Wetland and Riparian Protection Areas" subsections A through C occupy the wetland or riparian resource site or more than 50% of the resource buffer area. The Planning Director or the Director's designee shall be the approving authority for applications to alter the buffer area.

To determine the average setback width, measurements shall be made at no greater than 50 foot intervals over the distance the property abuts the wetland or riparian site.

VI. Transportation Facilities and Structures Development Standards

- A. General. The following standards shall apply to transportation facilities and structures within wetland protection areas, including roads and driveways, bridges, bridge crossing support structures, culverts, and pedestrian and bike paths.
- B. Standards for review of conditional uses include the following:
 - 1) Wetland and riparian protection areas shall be crossed only where there are no practicable alternatives to avoid the resource;
 - 2) Transportation facilities and structures crossing wetland and riparian protection areas shall be no wider than necessary to serve their intended purposes; and
 - 3) Within buffer areas, new roads, driveways, and pedestrian and bike paths shall be located or constructed so as not to alter the hydrology of the adjacent wetland or riparian corridor.

VII. Utility Development Standards

- A. General. The following standards shall apply to permitted crossing, trenching, or boring for the purpose of developing a corridor for communication, energy, or other utility lines within or crossing parcels in wetland or riparian protection areas.
- B. Standards for review of all utility uses include the following:
 - 1) Utility maintenance roads in or crossing protected resources shall meet applicable standards for transportation facilities and structures in protected resources; and
 - 2) For underground utilities, the following additional standards shall apply:
 - a. Boring under the waterway, directional drilling, or aerial crossing is preferable to trenching. If trenching is the only alternative, it shall be conducted in a dry or dewatered area with stream flow diverted around the construction area to prevent turbidity;
 - b. Common trenches, to the extent allowed by the building code, shall be required in order to minimize disturbance of the protected resource;
 - c. Materials removed or excavated during trenching, boring, or drilling shall be deposited away from the protected resource, and either returned to the trench as back-fill, or if other material is to be used as back-fill in the trench, excess materials shall be

immediately removed from the protected resource and its associated buffer. Side-casting of removed material into a protected resource shall not be permitted;

d. The ground elevation of a protected resource shall not be altered as a result of utility trench construction or maintenance. Finish elevation shall be the same as starting elevation; and

e. Topsoil and sod shall be conserved during trench construction or maintenance, and replaced on top of the trench.

C. In addition to the other conditional use criteria, conditional use approval of utility corridor routes shall be based on evidence that:

1) Hydraulic impacts on protected resources are minimized; and

2) Removal of native vegetation is minimized.

Where feasible, crossings of wetland and riparian protection areas shall be perpendicular to minimize impact area.

VIII. Vegetation Management Standards

A. General. The following standards shall apply to vegetation in wetland and riparian protection areas:

B. Standards for review of conditional uses include the following:

1) Vegetation removal, pruning, or mowing in a significant wetland or riparian corridor shall be the minimum necessary and in no case shall substantially impair any resource functions and values. Vegetation removal, pruning, or mowing in the buffer shall be the minimum necessary. Removal, pruning, or mowing of vegetation shall be allowed if the applicant demonstrates one of the following:

a. The action is necessary for the placement of a structure or other allowed use for which a building permit has been issued;

b. The action is necessary for maintenance of an existing structure or transportation facility;

c. The action is necessary for correction or prevention of a hazardous situation;

d. The action is necessary for completion of a land survey;

e. The action involves the maintenance of a landscaped area that existed prior to the date of this ordinance;

- f. The action is part of an approved restoration, enhancement, mitigation, or erosion control plan, including, but not limited to, invasive or noxious species removal and replacement with native species, and wetland area restoration, mitigation, or enhancement;
 - g. The action is part of a landscape plan approved by the City, and any other appropriate agencies, in conjunction with a building permit that minimizes adverse impacts on protected resources; or
- 2) Planting shall be permitted in accordance with the following standards:
 - a. The planting is part of an approved restoration, enhancement, mitigation, or erosion control plan;
 - b. The planting is part of a landscape plan using appropriate native plant species, and the plan is approved by the City in conjunction with approval of a building permit; or
 - c. The planting is to replace dead or damaged plants that were either part of a maintained landscape or part of the existing native plant community.

11.0 Impact of the Proposed Protections on Buildable Land Inventories

This section estimates the impact of the recommended program for protecting Springfield's resource areas on the inventory of buildable residential, commercial and industrial land. The administrative rule quoted above is somewhat vague about how to compute the impact. Some contend that the protected acreage should be subtracted from the current inventory of buildable land. Others contend that the protected acreage should be subtracted from the surplus of buildable land that was determined at the adoption of the inventory. Case law supports subtracting the protected acreage from the surplus of buildable land.

Tables 11-1, 11-2, and 11-3 below summarize the amount of land that would be subtracted from the Eugene-Springfield inventories of surplus of buildable residential, commercial and industrial lands that were identified when each inventory was adopted.

Table 11-1. Analysis of Maximum Possible Impact on Supply of Residential Lands within the Eugene-Springfield Metropolitan Area

Residential Land Supply	Acres
Eugene-Springfield Metropolitan Area Residential Lands and Housing Study Surplus Acres	
Low Demand Assumption	1862.00
or	or
High Demand Assumption	790.00
Acres Removed from Residential Designation by Previous Plan Amendments*	
Eugene	-84.90
Springfield	-52.03
Total	-136.93
Maximum Possible Residential Acres Impacted by Eugene Goal 5 Protection Measures	-445.77
Maximum Possible Residential Acres Impacted by Springfield Goal 5 Protection Measures	-14.18
Remaining Surplus	1265.12
	or
	193.12

Table 11-2 . Analysis of Maximum Possible Impact on Supply of Commercial Lands within the Springfield Urban Growth Boundary

Commercial Land Supply	Acres
Springfield Commercial Lands Study (2000) projects a deficit of commercial land.	-158 acres
Acres Removed from Commercial Designation by Previous Plan Amendments*	-2.8 acres
Maximum Possible Commercial Acres Impacted by Springfield's Goal 5 Protection Measures	-11.56 acres
Remaining Surplus (Deficit)	(-172.36 acres)

Table 11-3. Analysis of Maximum Possible Impact on Supply of Industrial Lands within the Eugene-Springfield Metropolitan Area

Industrial Land Supply	Acres
Metropolitan Industrial Lands Inventory Report Surplus Acres Low Demand Assumption or High Demand Assumption	2954.28 or 2432.28
Acres Removed from Industrial Designation by Previous Plan Amendments* Eugene Springfield Total	-642.30 -90.80 -732.80
Maximum Possible Industrial Acres Impacted by Eugene Goal 5 Protection Measures	-44.73
Maximum Possible Industrial Acres Impacted by Springfield Goal 5 Protection Measures	-54.43
Remaining Surplus	2122.01 or 1600.01

* Does not consider actions taken by Eugene to add additional lands to the surplus.

11.1 Impact on the Residential Lands Inventory

In 1999, the Eugene-Springfield Metropolitan Area Residential Land and Housing Study (Residential Lands Study) estimated the amount of vacant buildable residential land in the area. In Springfield, a total of 3,087 acres of buildable lands were identified. The Study classified wetlands listed on the Springfield Local Wetland Inventory as unbuildable and were not included in the estimated supply of buildable residential lands. Other types of constraints were also considered and classified as unbuildable and were not counted in the buildable residential land inventory. The list of constraints included:

- Floodways;

- **Wetlands listed on the Springfield Local Wetlands Inventory larger than .25 acres;**
- Land within the easement of 230 KV power lines;
- Land within 75 feet of a Class A stream or pond;
- Land within 50 feet of a Class B stream or pond; and
- Small irregularly shaped lots.

Since the Residential Lands Study did not include wetlands listed on the Local Wetlands Inventory in the buildable lands inventory, it is assumed that protecting these wetland sites from conflicting residential development will not reduce that inventory. The development setbacks recommended for significant wetland sites in this study will slightly reduce the inventoried acreage of vacant buildable land adjacent to wetland features.

Wetland Setbacks

As noted in Table 11-4 below, about 9.95 acres of low-density residential (LDR) and .59 acres of medium density residential (MDR) land will be removed from the residential lands inventory by the 25-foot setback recommended for those wetlands not already protected by the 50 and 75 foot setbacks required by Springfield's stormwater quality protection policies. Keep in mind that this is a worst case scenario and assumes that the developer is unable to locate required stormwater facilities within the recommended setbacks and that subdivision design cannot arrange for the yard areas of affected dwelling units to be placed adjacent to the wetland, thus reducing or eliminating lost development area.

Riparian Setbacks

In addition to wetland setbacks, recommended riparian setbacks will also result in the removal of vacant acreage from the inventory of buildable residential lands. As noted in Table 11-4, about 3.42 acres of low-density residential (LDR) and .22 acres of medium density residential (MDR) land will be removed from the residential lands inventory by the 25-foot setback recommended for those wetlands not already protected by the 50 and 75 foot setbacks required by Springfield's stormwater quality protection policies.

The combined impact of the proposed 25-foot setbacks for wetlands and riparian areas is 14.18 acres. This represents .45% of the 3,087 acres of buildable residential land described in the 1999 Residential Lands Study.

In May 2004, a Residential Lands Study Monitoring Report was published, updating the residential lands inventory to reflect development through 2003. The report estimated that at the end of 2003 there was 1,361 acres of remaining buildable residential land in Springfield. The amount of land removed from the buildable inventory by the 25-foot wetland and riparian setbacks proposed by this report represents about 1% of remaining 1,361 acres.

Table 11-4. Vacant Residential Land within Proposed Protection Setbacks

Setback Distance	Vacant LDR Acres	Vacant MDR Acres	Total Acres
Wetland Setbacks			
25 foot	9.95	.59	10.54
50 foot	9.4	2.73	12.13
75 foot	4.97	4.15	9.12
Total	24.32	7.47	31.79
Riparian Setbacks			
25 foot	3.42	.22	3.64
50 foot	6.06	2.73	8.79
75 foot	4.97	4.15	9.12
Total	14.45	7.1	21.55
Grand Total	38.77	14.57	53.34

11.2 Impact on the Commercial Lands Inventory

The Springfield Commercial Lands Study (2000) listed several types of development constraints that affected commercial properties. These development constraints included:

Major transmission lines;
Hazardous waste sites;
Slopes greater than 15%;
Lots less than 6,000 square feet in size;
Lots with poor visibility;
Lots with inadequate access;
Hydric soils;
Unstable soils;
Willamette Greenway and Greenway setbacks;
Floodway and floodway fringe;
Wellhead zone of influence;

Wetlands listed on the Springfield Local Wetland Inventory;

Other potentially regulated natural resource sites [Natural Resources Study Inventory];

Sites with Plan/Zone conflicts.

The Commercial Lands Study classified sites on the on the Springfield Local Wetland Inventory as constrained. The presence of these wetlands was noted and the inventory of vacant commercial lands was noted to reflect the constraint. The riparian sites which are part of this study were also included as constrained, since they were part of the draft Springfield Inventory of Natural Resource Sites at the time Commercial Lands Study was conducted.

Since the Springfield Commercial Lands Study did not remove wetlands and riparian sites, protection measures proposed by this study will have an impact on the inventoried acreage of vacant commercial lands. The development setbacks recommended for significant wetland and

riparian sites will further reduce the inventoried acreage of vacant buildable commercial land adjacent to these resource sites. The extent of this impact is discussed below.

The Commercial Lands Study concluded that there was about 85 acres of vacant buildable commercial land in Springfield. An additional 12 acres was projected for redevelopment by the Study bringing the total to 97 buildable acres. Demand for vacant commercial land for the planning horizon 2015 was 255 acres. The 2000 Commercial Lands Study concluded that there was a 158 acre deficit of buildable commercial land.

Wetland Impacts

Table 11-5 shows that .07 acres of vacant commercial land would be removed from the Commercial Lands Inventory if wetland sites zoned for commercial development were fully protected. The 25-foot wetland setback recommended by this study would remove an additional 1.47 acres of vacant commercial land from development. This figure assumes that the developer is unable to locate required stormwater facilities or required landscaping within the recommended setbacks, thus reducing or eliminating lost development area.

The total impact on the Commercial Lands Inventory would be a reduction of 1.54 acres if wetland sites and their setbacks were fully protected.

Riparian Site Impacts

Table 11-5 shows that about acres 2.78 of vacant commercial land lies within inventoried riparian sites that are protected by the Springfield's Stormwater Quality Management program. Therefore, no commercial acreage is removed from the Commercial Lands Inventory by the implementation of proposed protections in this study. As noted in Table 11-5, no vacant commercial land will be removed from the inventory by the proposed 25-foot setbacks.

The total impact on the Commercial Lands Inventory would be a reduction of 1.54 acres if wetland and riparian sites and their setbacks were fully protected. This represents 1.8% of the 85 acres of buildable commercial land described in the Springfield Commercial Lands Study.

Table 11-5. Vacant Commercial Land within Proposed Protection Setbacks

Zoning District	Site Acreage	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres
Wetlands					
Community Commercial	.07	1.47	.11	0	1.65
Neighborhood Commercial	0	0	0	0	0
General Office	0	0	0	0	0
Major Retail Commercial	0	0	0	0	0
Wetland Total	0.07	1.47	0.11	0	1.65

Zoning District	Site Acreage	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres
Riparian Areas					
Community Commercial	2.78	0	0	2.6	5.38
Neighborhood Commercial	0	0	0	0	0
General Office	0	0	0	0	0
Major Retail Commercial	0	0	.24	0	.24
Riparian Total	2.78	0	0.24	2.6	5.62
Grand Total	2.85	1.47	.35	2.6	7.27

11.3 Impact on the Industrial Lands Inventory

The 1992 Metro Area Industrial Lands Study assessed the supply and demand for industrial land in the greater Eugene-Springfield area. The study concluded that there was about 709 acres of buildable industrial land within Springfield's UGB. Like the Springfield Commercial Lands Study, the Industrial Lands Study noted those industrial sites with wetland and riparian constraints but did not exclude them from the inventory. For that reason, protection of wetland and riparian lands under the policies proposed by this study will reduce the inventory of buildable industrial lands. The extent of this impact is discussed below.

Wetland Impacts

GIS analysis shows that about 30.64 acres of vacant industrial land are affected by wetlands that are not already protected by the Springfield Stormwater Quality Management (SQM) program. These wetlands are recommended for protection by a 25-foot development setback under the Springfield natural Resources Study. These setbacks add another 6.82 acres to the amount of industrial zoned land that would be removed from the Industrial Land Inventory if wetland sites and the setbacks were fully protected under the policies recommended by this study. The total impact to the inventory of industrial lands would be 37.46 acres. Table 11-6 shows the total acreage for land affected by wetlands and the acreage protected by setbacks from both this program and the existing SQM program.

Riparian Impacts

GIS analysis shows that 13.70 acres of vacant industrial land are affected by riparian areas that not already protected by the Springfield Stormwater Quality Management (SQM) program. These riparian areas are recommended for protection by a 25-foot development setback under the Springfield Natural Resources Study. These setbacks add another 3.27 acres to the amount of industrial zoned land that would be removed from the Industrial Land Inventory if wetland sites and the setbacks were fully protected under the policies recommended by this study. The total impact to the inventory of industrial lands would be 16.97 acres. Table 11-6 shows the total

acreage for land affected by riparian corridors and the acreage protected by setbacks from both this program and the existing SQM program.

Total Impact

The total impact on the Industrial Lands Inventory would be a reduction of 54.43 acres if all wetland and riparian sites protected by this program and their 25-ft setbacks were fully protected. This represents less than 1% of the 709 acres of buildable industrial land for Springfield in the Industrial Lands Study.

Table 11-6. Vacant Industrial Land within Proposed Protection Setbacks

Zoning District	Total Wetland Site Acreage	Site Acres <u>not</u> Protected by SQM	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres
Wetlands						
Light-Medium Industrial	28.20	(27.76)	4.81	.82	0	33.83
Heavy Industrial	13.16	(2.88)	2.01	19.15	0	34.32
Campus Industrial	.35	0	0	1.28	0	1.63
Special Heavy Industrial	0	0	0	0	0	0
Quarry Mining	0	0	0	0	0	0
Booth Kelly MU	.13	0	0	.47	0	0.60
Wetland Total	41.84	(30.64)	6.82	21.72	0	70.38
Riparian Areas	Total Riparian Site Acreage	Site Acres <u>not</u> Protected by SQM	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres
Light-Medium Industrial	16.48	(10.89)	2.05	4.72	1.26	24.51
Heavy Industrial	68.31	(2.81)	1.22	8.93	0	78.46
Campus Industrial	3.22	0	0	2.83	.03	6.08
Special Heavy Industrial	0	0	0	0	0	0
Quarry Mining	0	0	0	0	0	0
Booth Kelly MU	.21	0	0	.82	0	1.03
Riparian	88.22	(13.70)	3.27	17.3	1.29	110.08

Zoning District	Total Wetland Site Acreage	Site Acres <u>not</u> Protected by SQM	25 ft. Setback	50 ft. Setback	75 ft. Setback	Total Acres
Total						
Grand Total	130.06	(44.34)	10.09	39.02	1.29	180.46

Appendix A Springfield Inventory of Natural Resource Sites

Resource Site Descriptions

Understanding the Site Descriptions

In this section, a description is provided for each site. The description includes several variables, described below.

Variable	Description
Site:	← The site number, followed by the site name. Site numbers that begin with <i>S</i> are in Springfield. Eugene area site numbers begin with <i>E</i> . The numbering protocol was established before Eugene, Springfield and Lane County chose to work independently to complete their Goal 5 planning work. One site, E39—Glenwood Slough, was within Eugene’s planning jurisdiction when the Draft Natural Resources Inventory was created. Planning Jurisdiction for Glenwood was subsequently transferred to Springfield. The Willamette River, which passes through both Eugene and Springfield, starts with <i>W</i> .
Listed LWI	← The Springfield Inventory of Natural Resource Sites lists a number of significant riparian corridors. Many of these corridors are identified on the Springfield Local Wetland Inventory (LWI) as well. <i>Yes</i> indicates that resource site is also listed on the LWI. <i>No</i> indicates that it is not on the LWI.
Acres:	← The size of the site in acres.
WHA score:	← The score the site received on the WHA. The WHA methodology is described in detail in Appendix C.
WHA source:	← The source of the inventory work. The list of original inventory documents is in Appendix C.
Area map(s):	← At the end of this section are 12 maps that cover different portions of the study area. Any given site may appear on more than one of these area maps.
Description:	← A brief narrative description of the site.

Springfield Area Natural Resources Inventory

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S03-Springfield Millrace A, Natural	Yes	29.7	61-62	Ester Lev, 1990	9, 10
Description: This portion of the Millrace is a part of the same system as Site S04. Density, diversity, and health of riparian vegetation and adjacent land use give this section a higher wildlife habitat value. Black cottonwood, willow, hawthorne, bigleaf maple, with an understory of snowberry and rose are common vegetation along the Millrace. The Millrace functions as a wildlife travel corridor, linking upland and wetland sites in Springfield. It also provides water for					

wildlife utilizing adjacent upland areas with no water.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S04- Springfield Millrace B, Industrial, Mill Pond	Yes	43.0	40-41	Ester Lev, 1990	9, 10

Description:

The Millrace runs from the Willamette River to the Mill Pond adjacent to the Booth Kelly site in Springfield. The upper stretches of the Millrace (Site S03) provide higher value wildlife habitat than the stretch within Site S04. This lower stretch of the Mill Race has a thin riparian strip with industrial and agricultural uses immediately adjacent. Noise, activity, and runoff from adjacent activities may adversely impact wildlife use of the Millrace. Water quality should be monitored.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S07-Brand S/Natron	Yes	23.9	34	Ester Lev, 1990	9, 12

Description:

Site S07 in east Springfield is a series of irrigation ponds and slough channels. The entire site has been altered and is highly disturbed. Riparian vegetation along the ponds where present is diverse and dense. The slough channels are vegetated with rush, sedge, spreading bentgrass, cattail, and Himalayan blackberry. The open water and adjacent riparian vegetation provide habitat for waterfowl, shorebirds, and some songbird species.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S09-Weyerhaeuser B	No	71.9	50	Ester Lev, 1990	10, 11

Description

This site is located south of Highway 126 near the Weyerhaeuser industrial site. It is connected to the McKenzie River via slough channels that pass beneath Highway 126. Two ponds on the site are former borrow pits. Vegetation includes overstory of bigleaf maple and black cottonwood and an understory of willow, red alder, and snowberry. The site scores high on diversity and quality of the water features on the site.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S10-Weyerhaeuser A	No	195.0	70	Ester Lev, 1990	11

Description:

The site is north of Highway 126 near Weyerhaeuser. The site has a large forested area with excellent structural diversity, abundant sources of food, water and cover, and strong connections with other wildlife habitat sites. Vegetation includes black cottonwood, willow,

snowberry, sedge, rush, and cattail. The site is a major wildlife corridor and provides vital components of fish habitat for fish.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S12/13-Q Street Ditch	Yes	39.0	45 (Trees) 36 (Treeless)	Ester Lev, 1990	6, 10, 11
Description: The Q Street ditch flows from 28 th and Main in Springfield northward to I-105 and then flows westerly, parallel to I-105, under I-5, across to Alton Baker Park, where it joins the Canoe Canal. Much of the Q Street Ditch follows an historic drainage pattern that ultimately drained into the Willamette River, near Goodpasture Island. Portions of the ditch are riprapped and culverted (Site S13). Portions within this site have a thin riparian strip. The vegetation along the water's edge and the bank provides some food, cover, and escape for some songbird, waterfowl, reptile, and small mammal species.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S14-Guy Lee	No	2.4	35	Ester Lev, 1990	6
Description: Guy Lee is a small Springfield park adjacent to Guy Lee school. The site is primarily a disturbed open grassland and has a small remnant riparian strip within a lower swale area. Water is present during portions of the growing season. Oregon ash and willow are the dominant overstory vegetation with an understory of snowberry and Himalayan blackberry. This small remnant forested area provides habitat for some songbird and small mammal species; however, low interspersed value may limit wildlife use.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S17-Maple Island Slough	No	347.1	67	Ester Lev, 1990	5, 11
Description: Site S17 is a good representation of a Willamette Valley riparian corridor vegetated with mostly native plant species. Structural diversity, and quantity and density of vegetation are high. Oregon ash, red alder, and bigleaf maple are the dominant tree species. Red osier dogwood, snowberry, rose and Oregon hazel are the dominant shrub species. The site provides feeding, roosting, and nesting habitat for a variety of bird, mammal, and herptile species. Connection to the McKenzie River on both ends of the site enhance the interspersed value and wildlife use of this site.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S18-SCS Channel #6	Yes	13.3	22-23	Ester Lev, 1990	6
Description: This site is similar to the many small, riparian remnants and longer, intermittent channels that					

are scattered throughout the metropolitan area. The steep banked ditches are generally four to eight feet wide. Reed canarygrass, rush, spikerush, and soft stem bulrush are common emergent plants within the waterways. Young willow and black cottonwood have begun to establish along the top of the banks. This and other metropolitan channels remain connected to the greater hydrological system, although the channels themselves may have become intermittent due to piping under streets and through portions of some neighborhoods.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S20-Irving Slough North	Yes	19.6	67	Ester Lev, 1990	11

Description:

Site 20 is a good representation of a Willamette Valley riparian corridor vegetated with mostly native plant species. Structural diversity, quantity, and density of vegetation is high, with some interspersed snags. Black cottonwood, Oregon ash, red alder, and bigleaf maple are the dominant tree species with some western red cedar. The site provides feeding, roosting, and nesting habitat for a variety of bird, mammal, and herptile species. Proximity to the McKenzie River and other upland sites (e.g., Vitus Butte, Site S11) enhance the interspersed value and wildlife use of this site.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S21-South Irving Slough and Pond	Yes	13.7	47	Ester Lev, 1990	11

Description:

This site is composed of a small pond and riparian channel with some aquatic plant growth. Vegetation around the pond is sparse in some areas with a few pockets of black cottonwood, willow, and Himalayan blackberry. The banks of the pond are eroding. The adjacent riparian channel has steep banks and is vegetated primarily by exotic (introduced) plant species. The riparian channel connects to a high quality riparian channel and adjacent upland forest enhancing its interspersed value.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S22-Jasper Road Slough	Yes	44.8	67	Ester Lev, 1990	9

Description:

Site S22 is south of Jasper Road and north of the Middle Fork Willamette River. The site is a remnant of a once more widespread system of riparian corridors throughout the metropolitan area. It also connects with site S03, the Springfield Mill Race, and is influenced by the Middle Fork of the Willamette River. Existing vegetation provides wildlife habitat value. Great blue heron, osprey, and kingfisher are commonly observed. The banks are generally steep and vegetated with Himalayan blackberry as an understory with black cottonwood, willow, and bigleaf maple as the dominant overstory species. The water level varies seasonally. Interspersed value is moderate, due to proximity to other riparian corridors and uplands.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S24-Gray Creek	Yes	7.9	55	Ester Lev, 1990	12
Description: <p>Site S24 is in east Springfield, north of Highway 126 and south of the McKenzie River. It is a remnant of a once more widespread system of riparian corridors throughout the metropolitan area. Structural and vegetative diversity are limited; however, the existing vegetation does provide some wildlife habitat value. The banks are generally steep and vegetated with Himalayan blackberry as an understory with black cottonwood, willow, and bigleaf maple as the dominant overstory species. The water level varies seasonally. Interspersion value is moderate, due to proximity of other riparian corridors.</p>					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S-25 (Formerly E39) (R-GS-1, 3, 4, 5, 7)	Yes	12.30	46-47	Ester Lev,	6, 7
Description: <p>Site S-25 (formerly E-39) consists of segments of the Glenwood Slough near or adjacent to Interstate 5, Franklin Boulevard, Glenwood Boulevard and the Union Pacific Railroad tracks in the Glenwood area. S-25 is generally surrounded by industrial uses, railroad tracks and a highway.</p> <p>The western portion of S-25 wraps around the Glenwood solid waste transfer station. At its west end, the slough passes under the Willamette River I-5 overpass. This western portion has been channelized with cement sides.</p> <p>The portions of S-25 on either side of Glenwood Boulevard are more natural and contain significant riparian vegetation including willows (<i>Salix</i> spp.), black cottonwood (<i>Populus trichocarpa</i>), sedge (<i>Carex</i> spp.), rush (<i>Juncus</i> spp.), cattails (<i>Typha latifolia</i>), and reed canarygrass (<i>Phalaris arundinacea</i>). Interspersion with other natural areas is limited by I-5 and other adjacent roads, but S-25's proximity to the Willamette River may increase the number of wildlife species in the area. The Division of State Lands has determined that portions of this site are regulated wetlands (W-20, W-21, and W-22).</p> <p>The dominant riparian tree species include Oregon Ash, Sitka Willow, Red-Osier Dogwood, Black Cottonwood, Black Locust and Oregon Maple.</p> <p>No fish survey was conducted for S-25 and it is not shown on ODFW maps of fish-bearing streams. The proximity and open connectivity to the Willamette River also suggests that fish are present in the Slough.</p>					

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S-26 (R-GS-2)	Yes	1.56	17-57	Washburn	6, 7
Description: <p>Site S-26 is a perennial stream that varies in width between 2-5 feet. It is bordered to the west by I-5. Much of the stream and the defined impact area are located within ODOT right-of-way adjacent to I-5 and beneath the Willamette I-5 Bridge. S-26 is segmented, with a 462-foot culvert dividing the northern and southern segments of the stream. The northern segment of S-26 daylights under the Willamette I-5 Bridge before continuing north to the Willamette River.</p> <p>The dominant riparian tree species include Oregon Ash, Sitka Willow, Red-Osier Dogwood, Black Cottonwood, Black Locust, Oregon Maple, and Pacific Willow.</p> <p>No known fish survey was been conducted for S-26. The stream is not shown on ODFW maps of fish-bearing streams. There is an unnamed perennial drainage that begins on the west side of I-5 (in Eugene) and is culverted under the freeway where it converges with the culverted portion of S-26. The Eugene drainage that connects to S-26 has been documented by ODFW as having cutthroat trout. The presence of cutthroat in the Eugene drainage suggests that S-26 is also fish-bearing. The proximity and connectivity to the Willamette River also suggests that fish are present in S-26.</p>					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S-27 (R-GS-9)	Yes	.33	45	Washburn	6, 7
Description: <p>Site S-27 is a perennial stream segment that conveys water from the Moon Mt. area south of I-5. The stream is largely culverted from I-5 to the Glenwood slough, with occasional daylighting along the watercourse. S-27 is one of those daylighted segments which opens into a 40 foot wide riparian feature. The stream segment is about 274 feet in length and is bounded to the north and west by industrial and residential development. Some land to the south and east is undeveloped, but the stream is culverted as it passes beneath that area.</p> <p>S-27 is a dense thicket, dominated by Pacific Willow, Black Cottonwood, Maple species, Alder species, and Hazelnut trees. At the time the stream was assessed (July 2009) the feature was sufficiently shrouded by vegetation that the consultants noted that they “could not see the bottom of the drainage due to a steep slope and Salix sp. thicket.”</p> <p>No known fish survey was been conducted for S-27. It is not shown on ODFW maps of fish-bearing streams. The distance and lack of open connection to the Glenwood Slough and the Willamette River argue against this being classified as a fish-bearing stream.</p>					

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
S-28 (R-WR-6)	Yes	.73	61	Washburn	6, 7
Description: S-28 is a narrow stream that meanders through a wetland area that is vegetated by willow thickets and Reed Canary grass. It is sandwiched between the ODOT right-of-ways for the I-5 and McVay Hwy. The system is fed by a storm culvert from under the freeway and exits through a storm culvert under McVay Hwy. and into the Willamette River. The dominant riparian tree species include Oregon Ash, Douglas Fir, Red-Osier Dogwood, Black Cottonwood, Indian Plum, White Oak, and Oregon Maple.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
WA/WB Willamette River	Yes	628.2	Natural: 72-74, Urban: 64-66	Ester Lev,	
Description: The Willamette is a major river system and it is habitat for spring Chinook salmon, which is listed as threatened under the federal ESA. The riparian vegetation along the Willamette includes black cottonwood, Oregon ash, Pacific willow (<i>Salix lasiandra</i>), willow (<i>Salix</i> spp.), creek dogwood, red alder, white alder, and bigleaf maple. Reed canarygrass, rush species (<i>Juncus</i> spp., <i>Scirpus</i> spp.) and sedge species (<i>Carex</i> spp.) occur along the waterline. Belted kingfisher, great blue heron, green-backed heron, and osprey are commonly seen fishing and perching along the River. Swallows and warbler species frequent the riparian edge in spring and summer. Shorebirds, beaver, nutria, turtles and reptile species utilize the water's edge and downed trees. The river functions as a migration route and travel corridor for many wildlife species. The Willamette River in Eugene and Springfield harbors a diverse fish community, including: cutthroat trout, rainbow trout, mountain whitefish, spring chinook salmon, chiselmouth, mountain sucker, largescale sucker, redbelt shiner, sculpin, northern pikeminnow, peamouth, sand roller, dace, largemouth bass, smallmouth bass, and common carp (Chip Andrus, Waterworks Consulting, 2000, prepared for the City of Eugene Public Wastewater Division).					

Appendix B Springfield Local Wetland Inventory Report

Springfield Wetland Site Descriptions

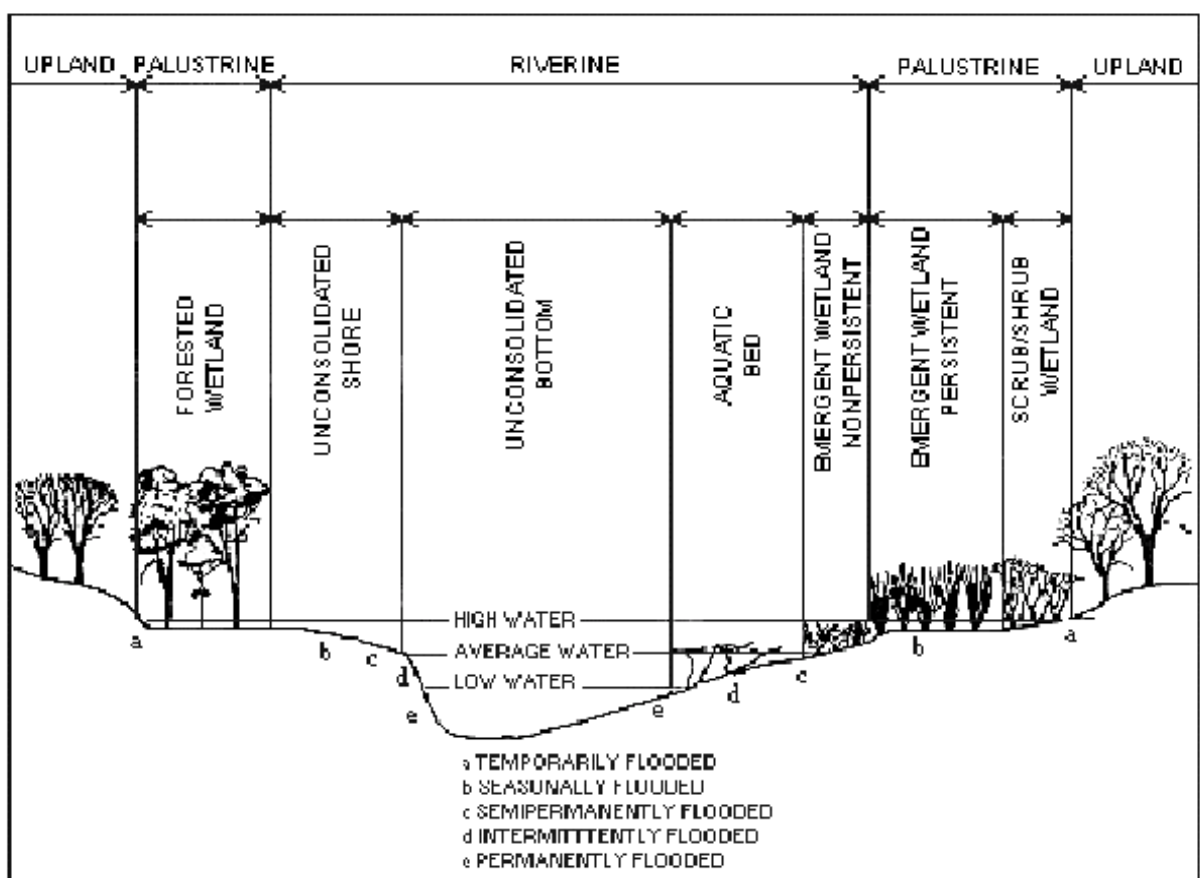
David Evans and Associates ecologists conducted field investigations on June 10, 11, 12, 22, and 23, 1992; on May 22 and 23, 1993, and again on April 24 and 25, 1996. Data from 209 data plots were analyzed and resulted in the identification of 58 jurisdictional wetlands within the study area (Figure 2). The wetland determination was based on the presence of dominant hydrophytic vegetation, hydric soil indicators, and evidence of positive wetland hydrology. A site number was assigned to each location. Those site numbers beginning with the letter “M” drain to the McKenzie River. Those beginning with “W,” drain to the Willamette River.

The wetland classification or type is described as a three-letter descriptor that is used by the US Fish and Wildlife Service to define the wetland system and class. The three-letter descriptors describing wetlands found in Springfield are defined below.

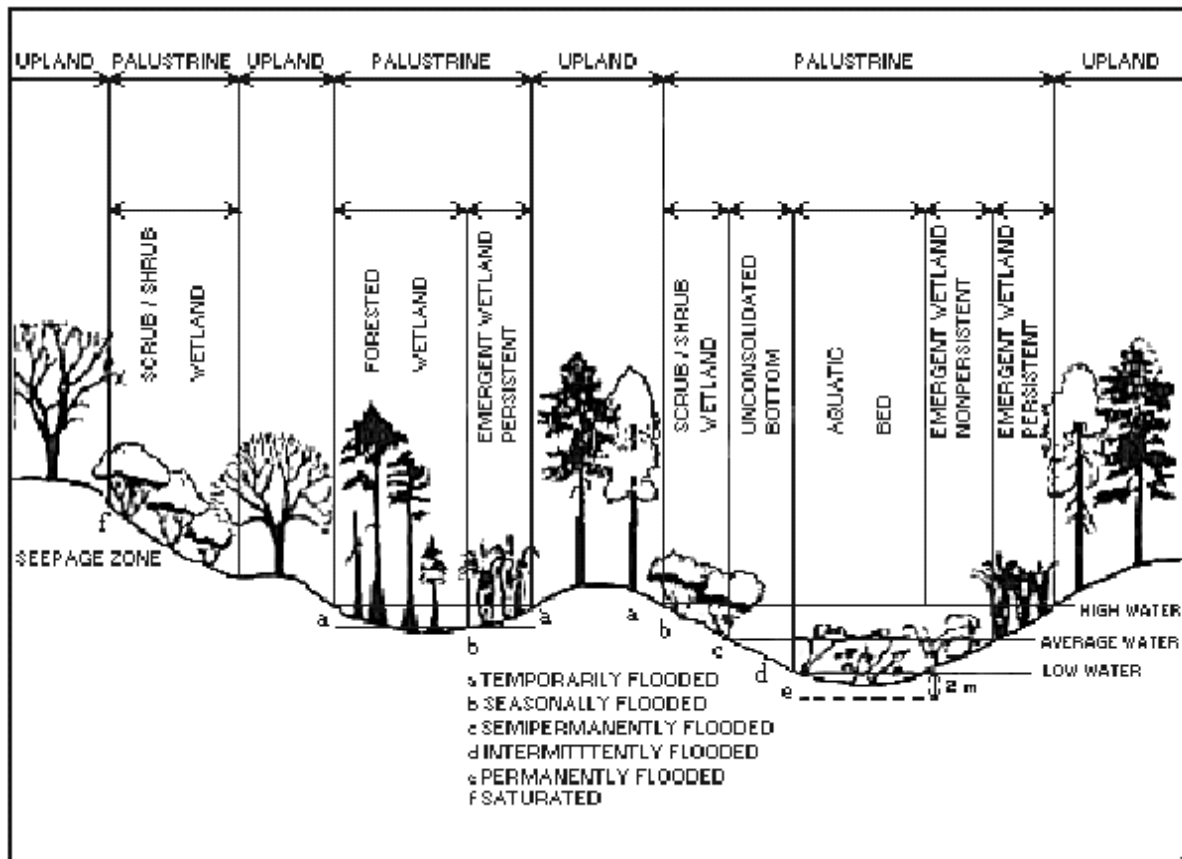
	System	Class		Descriptor
R	R iverine wetlands are found along rivers and streams and channels, naturally or artificially created, which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water.	I ntermittent	The stream or channel contains flowing water for only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent.	RIN
		L ower P erennial	Lower Perennial.—The gradient is low and water velocity is slow. Some water flows throughout the year. The substrate consists mainly of sand and mud.	RLP
P	P alustrine. All non-tidal wetlands dominated by trees, shrubs, and persistent emergent vegetation. These wetlands may be isolated or connected wet areas and include marshes, swamps, and bogs.	F Orested W etland	Wetlands dominated by trees greater than twenty feet in height (e.g., red maple, ash, spruce).	RFO
		S crub- S hrub	Wetlands dominated by shrubs and tree saplings less than twenty feet in	PSS

			height (e.g., buttonbush, alders and red maple saplings).	
		EMergent	Wetlands dominated by erect, rooted herbaceous hydrophytes.	PEM
		Open Water	Wetlands associated with a pond or open stream.	POW

Riverine Wetland System and Classes



Palustrine Wetland System and Classes



In 1999, Pacific Habitat Services applied the Oregon Freshwater Wetland Assessment Methodology to the Springfield Wetland Inventory to determine which wetland sites are “significant” under state criteria. In June 2003, Pacific Habitat Services updated the 1999 OFWAM report to include newly identified wetlands and a complex of wetlands in Glenwood that came into Springfield’s UGB with the jurisdictional transfer of Glenwood from Eugene in 1999.

Springfield Wetland Site Descriptions

Site: M1	Type: RLP	Acres: 4.94	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M1 is 4.94 acres and classified as riverine lower perennial (RLP). The creek is a tributary of the Cedar Creek located on the north end of the UGB continuing outside of the study area. Hydrology was directly observed and soils were dark in color and contained many stones. Overstory dominant species include big leaf maple (<i>Acer macrophyllum</i>). The understory dominant species was trailing blackberry (<i>Rubus ursinus</i>) and common snowberry (<i>Symphoricarpos albus</i>). Herbaceous dominant species include willow herb (<i>Epilobium</i> sp.)					

and a meadow-rue (*Thalictrum* sp.). Wetland/upland boundary delineations were made by topographic and vegetation characteristics consistent with top-of-bank (TOB) limits for this waterway.

Site: M2 A, B, C	Type: PEM	Acres: 17.65	OFWAM: Does Not Meet Significance Criteria		
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Description:

Wetland M2 is 17.65 acres and classified as a palustrine emergent wetland (PEM). The wetlands are located on industrial lands (Weyerhaeuser Company paper mill) and were formed as a result of past artificial diking for industrial sludge settlement ponds. Ponds have been recently drained (1991) and the dikes broken. No specific hydrology was present. Soils have been saturated with concentrated industrial sludge and were indeterminate as hydric soils. No overstory or understory was present. The herbaceous layer was dominated by beard-grass (*Polypogon monspeliensis*), pearly-everlasting (*Anaphalis margaritacea*), field mint (*Mentha arvensis*), common dandelion (*Taraxacum officinale*) and speedwell (*Veronica* sp.). Wetland/upland boundaries were primarily delineated by topographic and vegetative differences.

Site: M3	Type: PFO, PEM	Acres: 2.70	OFWAM: Does Not Meet Significance Criteria		
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Description:

Wetland M3 is 2.70 acres and classified partially as palustrine forested (PFO) and partially as PEM. The wetland is at the foot of Potato Hill on the north side. Hydrology was directly observed in 1993. Soils were dark in color with mottles. The overstory consisted of Oregon ash (*Fraxinus latifolia*) and black cottonwood (*Populus trichocarpa*). No understory was present. In PEM areas, herbaceous dominant species included velvet-grass (*Holcus lanatus*), creeping buttercup (*Ranunculus repens*), tall fescue (*Festuca arundinacea*), red fescue (*F. rubra*) and meadow foxtail (*Alopecurus pratensis*). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: M4	Type: PEM	Acres: 5.02	OFWAM: Special Interest for Protection		
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Description:

Wetland M4 is 5.02 acres and classified as PEM. The site is an abandoned drive-in theater and was highly disturbed from past agricultural uses and grading for the drive-in operation. The surrounding area has recently been mowed for fire control. The site was drained to the south and west by deep drainage ditches. The wetland is roundish in shape and located in the southwest corner of the site. Sparse Oregon ash and big leaf maple trees were scattered throughout the site. The herbaceous layer is dominated by tufted hair-grass (*Deschampsia cespitosa*), tall fescue, bulrush (*Scirpus* sp.), camas (*Camassia quamash*), creeping buttercup and gumweed (*Grindelia integrifolia*). Four individual plants of rare Bradshaw's lomatium

(*Lomatium bradshawii*) were observed on this site. Soils are dark in color with mottling and some surface staining indicating the seasonal presence of surface water in depressions. Hydrology was directly observed in May, 1993. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: M5	Type: PFO, PSS PEM	Acres: 9.00	OFWAM: Locally Significant Wetlands		
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Description:

Wetland M5 is 9.00 acres and classified as PFO, palustrine scrub-shrub (PSS) and PEM. The wetland is located at the foot of Potato Hill (south of Main Street and north of Potato Hill). Hydrology was directly observed in May, 1993. Soils were dark in color with mottles. Overstory dominant species include Oregon ash and black cottonwood. Understory dominants include Himalayan blackberry (*Rubus discolor*), rose (*Rosa* sp.) and Douglas' spirea (*Spiraea douglasii*). Dominant ground cover species included tuftedhair-grass, big-leaved lupine (*Lupinus polyphyllus*), red fescue, meadow foxtail, soft rush, creeping buttercup and sedge (*Carex* sp.). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: M6	Type: PEM, PSS	Acres: 4.10	OFWAM: Does Not Meet Significance Criteria		
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Description:

Wetland M6 is 4.10 acres and classified as PEM/PSS. There are several wetlands in this abandoned lot that were grouped together because of the closeness to each other and the highly disturbed history of this site. The wetlands are located in a disturbed field that contains the southern most section of the Q-Street Canal (an artificial canal) that runs through the center of the property in a north/south direction. This site has been disturbed from past agricultural and industrial uses. Direct hydrology was observed in the canal. Hydrology was assumed to be present in the small isolated wetland pockets based on hydrologic indicators, soils and vegetation. Soils are dark in color and contained a lot of bark (from an historic mill and log deck) and rocks (from fill). A small forested upland is located on the northeast corner of the property. A scrub-shrub habitat area is located on the west side in a filled log pond. The dominant species included willow, Oregon ash, Himalayan blackberry, common snowberry, Douglas' spirea, red elderberry (*Sambucus racemosa*), meadow foxtail, velvet-grass, sedge species (*Carex* sp.), field mint, tufted hair-grass and Scouler's popcorn flower (*Plagiobothrys scouleri*). Wetland boundaries were determined using the methodology for disturbed sites. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: M7	Type: PEM	Acres: 0.2	OFWAM: Does Not Meet Significance Criteria		
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Description: Wetland M7 is 0.2 acre and classified as PEM. The wetland is located east of Baldy View Lane. Hydrology was assumed based on hydrologic indicators, soils and vegetation. Soils were not sampled. A trace of soft rush (<i>Juncus effusus</i>) was observed growing in the wetland. This wetland is a small isolated depression in the middle of a mint field. This is an agricultural wetland.					
Site: M8	Type: PSS	Acres: 0.21	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M8 is 0.21 acre, determined through off-site methods and classified as PSS. The wetland is located on the west side of South 57th Street, north of Daisy Lane. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.					
Site: M10	Type: RIN	Acres: 2.72	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M10 is 2.72 acres, determined partially through on-site methods and through off-site methods and is classified as riverine intermittent (RIN). The wetland is located near the Springfield Memorial Cemetery. Where off-site methods were used, wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.					
Site: M11	Type: POW	Acres: 1.01	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M11 is 1.01 acre, determined through off-site methods and classified as palustrine open water (POW). The wetland is located on the south side of Hayden Bridge Road. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.					
Site: M12	Type: PEM	Acres: 1.22	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M12 is 1.22 acres and classified as PEM. The wetland is an artificial canal located between residential subdivisions on the east and rural agricultural land on the west. Hydrology was directly observed in the canal. Soils were dark in color with mottles. There was no overstory or understory present. Ground dominant species included an unidentified mowed grass. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					

Site: M14	Type: PEM, PFO	Acres: 33.45	OFWAM: Locally Significant Wetlands		
Description: Wetland M14 is 33.45 acres and classified as PEM/PFO. The wetland is located on the east end of Springfield's UGB, just north of Main Street. The site is been historically used as a pasture for cattle and sheep. Hydrology was directly observed in an excavated drainage that traverses the wetland. Property owners stated that there is a flow control device somewhere upstream that controls the amount of water flowing through the drainage. Direct hydrology was observed in the canal and the palustrine areas of the wetland in May, 1993. Soils were dark in color with mottles. Overstory dominant species included Oregon ash, black cottonwood and cultivated apple (<i>Pyrus malus</i>). Understory dominant species include Douglas spirea (<i>Spiraea douglasii</i>) and baldhip rose (<i>Rosa gymnocarpa</i>). Ground cover dominant species included meadow foxtail, red fescue, creeping buttercup, soft rush, velvet-grass and birds-foot trefoil (<i>Lotus corniculatus</i>). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: M15	Type: PEM	Acres: 6.36	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M15 is 6.36 acres and classified as PEM. The site is in a grazed pasture. No understory or overstory were present. Herbaceous dominant species include tapered rush (<i>Juncus acuminatus</i>) and tall fescue. Soils were dark in color with mottles. Hydrology was assumed based on hydrologic indicators, soils, and vegetation. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: M16 A, B, C, D, E	Type: PFO, POW, RLP, RLP PEM	Acres: 13.96	OFWAM : Locally Significant Wetlands (A, B, C)		
Description: Wetland M16 is 13.96 acres and classified as PFO/POW/RLP/PEM. This wetland is called Irving Slough. The overstory in the forested areas was dominated by Oregon ash, black cottonwood and big leaf maple. The understory dominant species included trailing blackberry, Himalayan blackberry and willow. Ground cover dominant species included reed canarygrass (<i>Phalaris arundinacea</i>), common plantain (<i>Plantago major</i>), soft rush and meadow foxtail. Soils were dark in color and mottled. Hydrology was observed in May, 1993. The majority of the drainage has been excavated to create a well-defined channel and the limits in these areas are the top of the bank. The natural flow of this drainage has been altered: the area drains to					

the west from tax lot 20 1 and from tax lot 400 it drains to the southeast. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: M17	Type: PEM	Acres: 3.15	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M17 is 3.15 acres and classified as PEM. The wetland is located west of an abandoned drive-in theater. The wetland is elongate in shape and has a drainage ditch that has been excavated diagonally through the area and drains into a culvert on the north end. Some fill has been placed on the site. No dominant overstory or understory was present. The ground layer was dominated by tufted hair-grass, red fescue, common horsetail, creeping buttercup, bentgrass (<i>Agrostis</i> sp.), Scouler's popcorn flower and meadow foxtail. Soils were dark in color with mottles. Hydrology was directly observed in May, 1993. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: M18	Type: POW, PSS	Acres: 40.72	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M18 is 40.54 acres, determined through off-site methods and classified as POW/PSS. The wetland is located adjacent to the McKenzie River. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation. DSL has performed an on-site determination of this site.					
Site: M19	Type: PFO	Acres: 0.37	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M19 is .037 acre and classified as PFO. The wetland is located north of Main Street and west of a recently developed subdivision. Hydrology was assumed based on hydrologic indicators, soils and vegetation. Soils were dark in color. The overstory was dominated by Oregon ash. No understory was present. Ground cover included tall fescue, meadow foxtail and sedge (<i>Carex</i> sp.). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: M20	Type: RLP	Acres: 0.52	OFWAM: Locally Significant Wetlands		
Description:					

Wetland M20 is 0.52 acres and classified as RLP. The wetland is located adjacent to Maple Island Slough, a tributary of the McKenzie River, on the northwest end of Springfield's UGB. The surrounding land was planted with mint (*Mentha* sp.) fields and filbert orchards. Direct hydrology was observed in the canal where on-site evaluation was conducted. Soils were dark in color with mottles. Willow and Himalayan blackberries lined the banks of the creek with reed canarygrass and velvet-grass dominating the bottom of the canal. Wetland limits are contained within the well-defined banks. Water has been impounded by roads. Where off-site determination was necessary on the western portion, wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.

Site: M21	Type: PEM	Acres: 0.39	OFWAM: Does Not Meet Significance Criteria		
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Description:

Wetland M21 is 0.39 acre and classified as PEM. The wetland is located in a former river bed. Specific hydrology was observed, soils were saturated at 3 inches subsurface and were very dark brown in color with faint mottles present. No overstory or understory was present. Ground layer dominant species included reed canarygrass and curly dock (*Rumex crispus*). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: M23	Type: PEM	Acres: 0.19	OFWAM: Does Not Meet Significance Criteria		
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Description:

Wetland M23 is 0.19 acre and classified as PEM. The site is located south of Olympic and west of 28th Avenue. This wetland is located behind the remaining foundation of a house. A few Oregon ash trees were in the area.. No understory was observed on this site. The ground cover was dominated by bulrush (*Scirpus* sp.). Soils were dark in color and mottled. Hydrology was assumed based on hydrologic indicators, soils and vegetation. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: M24	Type: PEM	Acres: 0.51	OFWAM: Does Not Meet Significance Criteria		
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Description:

Wetland M24 is a 0.51 acre and classified as PEM. The wetland is located in an abandoned field north of the Mohawk shopping center grocery store. Hydrology was assumed based on indicators such as the presence of hydric soils and drainage scars. Soils were dark in color. Part of the wetland boundaries were determined on-site, part were determined off-site. A few Oregon ash lined the south end of the drainage and a trace of Scot's broom (*Cytisus scoparius*) was also observed. There was scarce ground cover, but the species observed included velvet-grass, meadow foxtail and soft rush. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology. Note that the determination

was done both on-site and off-site.					
Site: M25	Type: PEM	Acres: 24.00	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M25 is 24.00 acres and classified as PEM. This wetland is called Q Street ditch. This wetland is an artificially created wetland that runs along the south side of Q Street. Direct hydrology was observed. Soils were dark in color and contained several stones and rocks. A few big leaf maples, western crabapples, Douglas spirea and Himalayan blackberries are growing on the banks. Herbaceous dominant species include common cattail (<i>Typha latifolia</i>), field mint and reed canarygrass. Parts of the Q Street ditch are lined with cement or rip-rapped. The wetland is well contained within the banks.					
Site: M26	Type: PFO, PEM, PSS	Acres: 1.85	OFWAM: Locally Significant Wetlands		
Description: Wetland M26 is 1.85 acres and classified as PFO/PEM/PSS. The wetland is located mostly in a park. Hydrology was directly observed in May, 1993. Soils were dark in color. Dominant overstory species was Oregon ash. Understory dominant species include Douglas spirea, Indian plum (<i>Oemleria cerasiformis</i>) and rose (<i>Rosa</i> sp.). Herbaceous dominants include reed canarygrass, soft rush, Dewey's sedge (<i>Carex deweyana</i>), cleavers (<i>Galium aparine</i>), common horsetail and Canada thistle. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: M27	Type: PEM, PFO	Acres: 8.28	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M27 is 8.28 acres and classified as PEM/PFO. The wetland is in a stream channel originating on the north side of Highway 126 on-ramp to Interstate 5 (I-5) and continues along the east side of I-5 to N. 2nd Street where it makes a 45 degree turn to the east. Direct hydrology was observed. Soils were dark in color. Overstory species were found only along Highway 126 and I-5 and include Oregon ash and willow. Douglas spirea was present in the understory. Herbaceous dominant species include reed canarygrass, common cattail, slough sedge, meadow foxtail and red fescue. The wetland limits were well contained within the banks. Wetland/upland boundary delineations were made by topographic and vegetation characteristics.					
Site: M28	Type: PEM	Acres: 1.51	OFWAM: Special Interest		

			for Protection (potential mitigation site)		
Description: Wetland M28 is 1.51 acres and classified as PEM. The wetland is the Corps of Engineers' wetland mitigation project for the Gateway Mall . Ponding was present in the ditch from commercial and highway runoff. No overstory or understory was present. Herbaceous dominants were Canada thistle, reed canarygrass, common cattail and velvet-grass. Wetland/upland boundary delineations were made by topographic and vegetation characteristics.					
Site: M29	Type: PFO, PEM	Acres: 1.08	OFWAM: Special Interest for Protection		
Description: Wetland M29 is 1.08 acres and classified as PFO/PEM. The wetland is located north of Booth Kelly Road. Run-off is impounded onto the site by Booth Kelly Road. Hydrology was directly observed and soils were dark in color. The overstory consisted of willows and Oregon ash and the understory was dominated by Himalayan blackberry. The ground was covered with red fescue. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: M30	Type: PFO, PEM, POW	Acres: 6.49	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M30 was originally mapped at 6.49 acres (currently mapped at 6.49 acres) and classified as PFO/PEM/POW. Upon a follow-up site visit by DSL in May 1993, the wetland vegetative community in the western part was observed by DSL staff to be broader than initially mapped. The new owner of the western portion of M30 did not grant permission for a site evaluation, thus final determination of the wetland boundaries has not been made in this area. The wetland is located west of Potato Hill. The wetland is predominantly forested on the east side and a pasture containing a ditch and farm pond is on the west side. Hydrology was directly observed in the farm pond and in the forested area by a spring on the hillside. Water coming out of the spring flows downhill into a forested wetland shelf. Soils were dark in color with mottles. Overstory dominant specie was Oregon ash. There was a sparse understory, but a thick ground cover of meadow foxtail, velvet-grass, red fescue, slough sedge and stinging nettle (<i>Urtica dioica</i>). An abundance of Camas (<i>Camassia quamash</i>) was also observed by DSL and City staff. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					

Site: M31	Type: POW	Acres: 8.06	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M31 is 8.06 acres and classified as POW. The wetland is located in industrial lands that abut the continuation of the Irving Slough. Hydrology was observed in the pond. Wetland boundaries were determined at the high water mark.					
Site: M32	Type: PEM	Acres: 3.39	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M32 is 3.39 acres and classified as PEM. The wetland is located west of North 31st Street. The wetland is a deeply incised ditch with sparse emergent vegetation. It was excavated to drain the agricultural fields. Wetland boundaries are contained within the well-defined banks. DSL and the Army Corps of Engineers (ACOE) have claimed that this is not a jurisdictional wetland.					
Site: M33 A, B	Type: POW, PSS, RLP	Acres: 119.56	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M33 is 139.83 acres and is classified as POW/PSS/RLP. The wetland is located south of Highway 126 and north of the Weyerhaeuser warehouse. This is a composite wetland that includes the Weyerhaeuser log ponds. These are well-incised ponds that are vegetated with blackberries and horsetail along the banks. The ponds are not considered wetlands, but are "other waters". They are connected to the McKenzie River via a slough. Only the slough qualifies as wetland. Wetland boundary determinations were made at the top-of-bank.					
Site: M34	Type: PFO	Acres: 0.08	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M34 is 0.08 acre and is classified as PFO. This small wetland is located northeast of Booth Kelly Road and is a small isolated ash grove in an abandoned lot located behind two residential subdivisions. Lawn debris from these subdivisions has been dumped onto the lot. The wetland is vegetated with Oregon ash, baldhip rose, camas and bentgrass. The wetland limits were determined where the vegetation changed and there were no indicators of hydrology.					
Site: M35	Type: PEM	Acres: 4.91	OFWAM: Does Not Meet		

			Significance Criteria		
Description: Wetland M35 is 4.91 acres and is classified as PEM. It is located at the foot of Potato Hill. Part of this wetland was determined on-site and part was determined off-site because property owner access was not granted. The majority of this wetland is part of residential backyards. This dominant vegetation includes Oregon ash, meadow foxtail, red fescue, creeping buttercup and field mint. Hydrology was directly observed and soils were a dark color with mottles. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: M36	Type: PEM	Acres: 0.75	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M36 is 0.75 acre and is classified as PEM. It is located at the foot of Potato Hill. The majority of this wetland is part of residential backyards. Hydrology was directly observed. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: M37	Type: PEM	Acres: 0.40	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M37 is 0.0acre and is classified as PEM. It is located on the east side of Potato Hill. This wetland is a drainage ditch in a pasture that empties into a culvert on the north end. Hydrology was directly observed. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: M38	Type: PEM, PFO	Acres: 0.08	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M38 is 0.08 acre and is classified as PEM/PFO. It is located at the foot of Potato Hill. This wetland is between a residential subdivision on the west and a driveway on the east. A ditch as been excavated parallel to the driveway to collect runoff from Potato Hill and the bordering subdivision. The ditch is vegetated with black cottonwood, Oregon ash, Himalayan blackberry, reed canarygrass, red fescue and creeping buttercup. Hydrology was directly observed. The majority of this wetland is part of residential sideyards and the emergent areas are regularly mowed. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: M39	Type: PEM	Acres: 1.90	OFWAM: Does Not Meet		

			Significance Criteria		
Description: Wetland M39 is 1.90 acres and is classified as PEM. It is located on the northeast quadrant of the Main Street and NE 69th Avenue intersection. This wetland is a braided drainage within a grass pasture/field that empties into culverts on NE 69th Avenue. Prior land use has created incised ditches which cross the site to lead additional flow into the roadside drainages. Standing water was directly observed in depressional areas or the incised drainages. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: M40	Type: RLP	Acres: 16.51	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland M40 is 16.51 acres and classified as RLP. This riverine system includes the main Cedar Creek course and associated drainages/braids. Most of the system has been channelized by adjacent agricultural and residential land use. Wetland boundaries were determined onsite where the vegetation changed and there were no longer indicators of hydrology. Wetland limits are TOB.					
Willamette Basin Wetlands					
Site: W1 A, B	Type: RLP, PEM	Acres: 9.60	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W1 is 9.60 acres, determined through off-site methods and classified as RLP/PEM. This mostly riverine system includes the lower reach of the Mill Race and includes a small, isolated wetland adjacent to the channel. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation and are limited to TOB.					
Site: W2	Type: PEM	Acres: 0.90	OFWAM: Special Interest for Protection		
Description: Wetland W2 is 0.90 acres and classified as PEM. The site is a large pasture which contains a ephemeral wet area under moderate grazing pressure and has been partially filled. No understory or overstory was present. Herbaceous dominant species include field mint and meadow foxtail. Soils were dark in color and mottled. Hydrology was directly observed. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					

Site: W3	Type: PFO, PEM, POW	Acres: 16.47	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W3 is 16.47 acres and classified as PFO/PEM/POW. The wetland is known as Jasper Slough. Approximately 1.0 acre of the slough is actually located within the UGB. The overstory is dominated by Oregon ash and willow. The understory dominants include evergreen blackberry (<i>Rubus laciniatus</i>) and Douglas spirea. Herbaceous dominant species include Oregon iris (<i>Iris tenax</i>) reed canarygrass, duckweed (<i>Lemna minor</i>) and bittersweet nightshade (<i>Solanum dulcamara</i>). Soils were dark in color with mottles. Hydrology was assumed based on hydrologic indicators, soils and vegetation. Sections of the slough have been dewatered, while others are naturally perennially wet. Wetland/upland boundary delineations were made by topographic characteristics where the vegetation changed and where there were no longer indicators of hydrology.					
Site: W4 A, B	Type: PFO, PEM	Acres: 0.97	OFWAM : Locally Significant Wetlands (A)		
Description: Wetland W4 is 0.97 acre and classified as PFO/PEM. The site is adjacent to the Middle Fork Willamette River in the southern end of Dorris Ranch. The overstory is dominated by black cottonwood. The understory dominant species was evergreen blackberry. Herbaceous dominants include reed canarygrass, slough sedge and spike rush. Soils were dark in color with mottles. Hydrology was assumed based on hydrologic indicators, soils and vegetation. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: W5	Type: POW, PFO, PEM	Acres: 5.70	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W5 is 5.70 acres and classified as POW/PFO/PEM. The site is located east of Harbor Drive and south of Dorris Street on the Dorris Ranch. The overstory is dominated by red-osier dogwood and Oregon ash. The understory dominant species include common snowberry and willow. Herbaceous dominant species include American speedwell (<i>Veronica americana</i>), Dewey's sedge, cow parsnip (<i>Heracleum lanatum</i>), bittersweet nightshade and Pacific water-parsley. Soils were dark in color with mottles. This wetland contains a pond connected to a forested wetland corridor that is isolated from the Willamette River by development. Hydrology was directly observed in the pond and hydrology was reconfirmed in the forested					

area in May 1993. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: W8	Type: POW	Acres: 1.22	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W8 is 1.22 acres, determined through off-site methods and classified as POW. The wetland is located along the Mill Race. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.					
Site: W9	Type: PEM	Acres: 0.22	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W9 is 0.22 acre and classified as PEM. The site is a pasture that has been partially filled. The overstory is dominated by black hawthorn (<i>Crataegus douglasii</i>). The dominant understory species is evergreen blackberry. The herbaceous dominant species is spreading bentgrass, common cattail and dotted smartweed (<i>Polygonum punctatum</i>). Soils were dark in color and gleyed. Hydrology was assumed based on hydrologic indicators, soils and vegetation. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: W10	Type: PSS	Acres: 2.25	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W10 is 2.25 acres and classified as PSS. The wetland is the Mill Race and connects with the Willamette River. This section of the Mill Race has been heavily disturbed from development along both sides. Some sections of the banks have been rip-rapped. Overstory dominant species include black cottonwood and willow. Himalayan blackberry and reed canarygrass line the banks of the slough. The soils were dark brown and saturated. Standing water was observed in the Mill Race. Very well-defined banks. Wetland limits are well-contained within the banks.					
Site: W11	Type: PFO	Acres: 0.67	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W11 is 0.67 acres and classified as PFO. Undisturbed forested park setting.					
Site: W12	Type: PFO	Acres: 1.42	OFWAM: Locally Significant		

			Wetlands		
Description: Wetland W12 is 1.42 acres and classified as PFO. This wetland is located in Island Park in a relatively undisturbed, forested area adjacent to the McKenzie River. Overstory dominant species is big leaf maple. Sword fern occurs in the understory along the forested western portion of the banks. The herbaceous layer is dominated by slough sedge. The soils were dark with mottles and saturated. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: W13	Type: PFO	Acres: 2.24	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W13 is 2.24 acres and classified as PFO. This wetland is the Patterson Slough which is located in a relatively undisturbed area adjacent to the Willamette River. Hydrology was directly observed. The soils here were dark in color and saturated. Overstory dominant species include big leaf maple and black cottonwood. Trailing blackberry and common snowberry dominate the understory along the forested the banks. The herbaceous layer is dominated by meadow-rue. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: W14	Type: PEM	Acres: 0.97	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W14 is 0.97 acres and classified as PEM. The wetland is located west of Prescott Lane, in a highly disturbed field that was formally used for agricultural purposes. The wetland is dominated by the following: Douglas spirea, Himalayan blackberry, rose, trailing blackberry, tall fescue, meadow foxtail, bluegrass species, reed canarygrass, velvet-grass and cleavers. Soils were dark in color with mottles. Hydrology was directly observed in May 1993. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: W15	Type: PFO	Acres: 0.79	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W15 is 0.79 acre and classified as PFO. This is an isolated pocket in an undisturbed riparian swale along the Willamette River. Overstory included red alder (<i>Alnus rubra</i>) and black cottonwood. The understory is dominated by trailing blackberry. The dominant ground cover included slough sedge and velvet-grass. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					

Site: W16	Type: PFO	Acres: 1.46	OFWAM: Locally Significant Wetlands		
Description: Wetland W16 is 1.46 acre and classified as PFO. This is a seasonal forested drainage north of Dorris Ranch, that runs along property boundaries downhill to the Willamette River. Part of the wetland limits were determined on-site and part were determined off-site using infra-red aerial photographs. The dominant vegetation along the swale was Oregon ash, rose, camas, meadow foxtail, and red fescue. The wetland limits were determined at the boundary of the relatively incised swale where the vegetation changed and there were no longer indicators of hydrology.					
Site: W17	Type: RLP	Acres: 8.35	OFWAM: Does Not Meet Significance Criteria		
Description: Wetland W17 is 8.35 acres and classified as RLP. This is an extensive riparian/wetland slough (Jasper Slough) drainage connecting the Mill Race to the Willamette River. The dominant vegetation along the wetland/riparian corridor was black cottonwood, Oregon ash, Sitka willow, Pacific willow, hazelnut, Douglas spirea, snowberry, Himalayan blackberry, common clover, Kentucky bluegrass, velvet-grass, meadow foxtail and tall fescue. The wetland limits were generally determined where the vegetation changed and there were no longer indicators of hydrology. In disturbed areas, a TOB determination was made where either filling or agricultural land use has encroached and incised the braided slough channels.					
Site: W18 (A-D)	Type: PEM, PFO	Acres: 145.15	OFWAM: Locally Significant Wetlands (A)		
Description: Wetland W18 (A-D) is 145.15 acres and classified as PEM/PFO. This is a large complex of wetlands located between hillside drainages and minor topographical folds in the Natron area, southeast of Springfield. All drainages flow in a generally southerly course into the Willamette River via culverts or as groundwater beneath the Jasper-Lowell Hwy. Dominant vegetation consisted of Oregon ash, black cottonwood, Kentucky bluegrass, crested dogtail, common plantain, Indian plum, Siberian candyflower, piggy-back plant, tall fescue, sweet vernal grass, meadow foxtail, suckling clover and white clover. Wetland limits were determined onsite where the vegetation changed and there were no longer hydrological indicator					
Site: W19	Type: POW,	Acres:	OFWAM: Locally		

	PFO	41.65	Significant Wetland		
Description: Wetland W19 is 41.65 acres and classified as POW/PFO. The wetlands were determined through on- and off-site methods. The wetlands are adjacent to the Springfield sheriff's pistol range and the portion of the Mill Race that has been widened to create a log pond for a mill. Overstory dominant species --- Understory dominant was ---. Herbaceous dominants were ---- -). Soils were dark in color with mottles. Hydrology was indicated by the dominance of hydrophytic vegetation and presence of surface water in depressions. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology and through use of black and white and infrared aerial photo interpretation and are limited to TOB.					
Site: W20	Type: PSS, PAB	Acres: 3.39	OFWAM: Locally Significant Wetland		
Description: Wetland W20 is 3.39 acres and classified as PSS/PAB. The wetland is adjacent to Glenwood Slough and the railroad tracks. Overstory dominant species include Oregon ash, Oregon white oak (<i>Quercus garryana</i>) and big leaf maple. Understory dominant was willow (<i>Salix</i> sp.). Herbaceous dominants were yellow flag iris (<i>Iris pseudoacorus</i>), spreading rush (<i>Juncus patens</i>) and marsh horsetail (<i>Equisetum arvense</i>). Soils were dark in color with mottles. Seasonal hydrology was indicated by the dominance of hydrophytic vegetation and presence of surface water in depressions. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: W21	Type: PSS	Acres: .47	OFWAM: Locally Significant Wetland		
Description: Wetland W-21 is .47 acres and is classified as a Palustrine Shrub-Scrub (PSS) wetland. The wetland is located under and east of the Interstate 5 Bridge just south of Franklin Blvd. W-21 was delineated in 2003 (WD2003-0273) as part of the ODOT's I-5 bridge project and Willamette River trail. The west portion was impacted by construction of the I-5 temporary detour bridge. W-21 is bounded to the south by railroad tracks. Glenwood Slough flows through the wetland as do several ditches used to convey stormwater. The wetland is less than one-half acre and is a judged locally significant wetland because of its hydrologic connection to the Willamette River. It is also connected to W22 and W23. The dominant wetland vegetation includes Oregon Ash, Pacific Willow, Black Cottonwood, Red-Osier Dogwood, Slough Sedge, and Creeping Buttercup.					

Soil types include: Chehalis silty clay loam, Pengra-Urban land complex.					
Site: W22	Type: PFO	Acres: 2.53	OFWAM: Locally Significant Wetland		
<p>Description:</p> <p>Wetland W-22 is 2.53 acres and is classified as a Palustrine Forested wetlands (PFO). W-22 is a PFO system located with a drainage that flows through the southern portion. Portions of the wetland have been previously delineated (WD's 03-0273, 00-0102, 98-0051). PHS did not have access to the easternmost and southern portions of W-22 and boundaries were determined through off-site observations, previous delineations, and aerial photography.</p> <p>The dominant wetland vegetation includes Oregon Ash, Pacific Willow, Black Cottonwood, Red Alder, Clustered Wild Rose, Red-Osier Dogwood, Slough Sedge, Nipplewort and Soft Rush.</p> <p>Soil types include Chehalis silty clay loam.</p>					
Site: W23	Type: PEM	Acres: .87	OFWAM: Locally Significant Wetland		
<p>Description:</p> <p>Wetland W-23 is .87 acres and is classified as Palustrine Emergent (PEM) wetland. W-23 is a series of small PEM wetlands located within the ODOT ROW and on private property. The wetlands were delineated in 2007 for the I-5 bridge project (WD08-0140). The wetlands are located at the bottom of a steep slope. Hydrology from the wetlands flows into a channel that drains to the northwest into the Willamette River. The wetlands located in the ODOT ROW are mowed and maintained.</p> <p>The dominant wetland vegetation includes Black Cottonwood, Wild Mint, Begger's Tick, Soft Rush, Sawbeak Sedge, Soft Brome, Common Velvet Grass, English Plantain, Tall Fescue, and Bluegrass species.</p> <p>Soils types include: Dixonville-Philomath-Hazelair Complex</p>					
Site: W24	Type: PFO	Acres: .51	OFWAM: Locally Significant Wetland		
Description:					

W-24 .51 acres and is classified as a Palustrine Forested wetland (PFO). W-24 is located at the bottom of surrounding steep slopes. There is a narrow intermittent drainage channel that flows through the middle of the wetland. This drainage continues east through a long culvert under McVay Hwy. and the railroad and out to the Willamette River. W-24 is located between I-5 and McVay Hwy. with residential land uses to the north and south.

The dominant wetland vegetation includes Black Cottonwood, Pacific Willow, Red-Osier Dogwood, Reed Canary Grass, Water-Parsley, Stinging Nettles, Slough Sedge and Field Horsetail.

Soil types include: Dixonville-Philomath-Hazelair Complex.

Site: W25	Type: PFO	Acres: 4.31	OFWAM: Does Not Meet Significance Criteria		
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Description:

W-25 is a depressional PFO area bounded on all sides by railroad tracks. PHS was able to view the wetland from adjacent road ROWs and the Franz bakery property to the east. It is surrounded by adjacent commercial properties. There is a drainage located along the southern portion of the wetland. It flows northwest into a large culvert located within the ROW of Glenwood Boulevard that is believed to flow into the Glenwood Slough (W-20).

The dominant wetland vegetation includes Black Cottonwood, Nootka Rose, Pacific Willow, Red-Osier Dogwood, Slender Rush, Slough Sedge, Wild Mint, Reed Canary Grass, Water-Parsley, Deadly Nightshade, Creeping Buttercup, and Field Horsetail.

Soil Types include: Chehalis silty clay loam.

Site: W26	Type: PEM	Acres: .86	OFWAM: Does Not Meet Significance Criteria		
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Description:

W-26 is a mosaic of 50% wetland and 50% upland located on undeveloped land north of I-5 at the top of a steep slope. It is relatively flat and appears to have been significantly disturbed in the past by scraping. Plant species include a mixture of upland and wetland species. Several areas had mottling and oxidized rhizospheres, despite the general lack of dark chroma soils. Deep tire ruts bare evidence of seasonally wet conditions.

The dominant wetland vegetation includes Black Cottonwood, Nootka Rose, Willow species, Slender Rush, Colonial Bentgrass, Coast Tarweed, Tall Fescue, Hedgehog Grass, Common Velvet Grass, Meadow Foxtail, Lowland Cudweed, Hyssop Loosestrife, and Narrow-leaved Flax.

Soil types include Urban land-Hazelair-Dixonville complex.

The tables below summarize the size and classification of the wetland areas within Springfield's Urban Growth Boundary.

McKenzie River Basin Wetlands

Site Number	OFWAM Significance	Acres	USFWS Classification(s)
M1		4.94	RLP
M2		3.12	PEM
M3		2.73	PEM/PFO
M4	Locally Significant Wetlands Special Interest for Protection	5.02	PEM
M5	Locally Significant Wetlands	9.13	PFO/PSS/PEM
M6		4.05	PEM/PSS
M7		0.2	PEM
M8*		0.2	PSS
M10*		2.72	RIN
M11*		1.01	POW
M12		1.22	PEM
M14	Locally Significant Wetlands	33.45	PEM/PFO
M15		6.41	PEM
M16	Locally Significant Wetlands	8.44	PFO/POW/RLP/PEM
M17		3.15	PEM
M18*		40.72	POW/PSS
M19		0.37	PFO
M20	Locally Significant Wetlands	0.52	RLP
M21		0.39	PEM
M22		0.1	PEM
M23		0.19	PEM
M24		0.51	PEM
M25		24.0	PEM
M26	Locally Significant Wetlands	1.85	PFO/PEM/PSS
M27		8.28	PEM/PFO
M28	Special Interest for Protection- Mitigation Site	1.51	PEM
M29	Locally Significant Wetlands Special Interest for Protection	1.08	PFO/PEM
M30		6.49	PFO/PEM/POW
M31		8.06	POW
M32		3.39	PEM
M33		13.75	POW/PSS/RLP
M34		0.8	PFO
M35		4.91	PEM
M36		0.75	PEM
M37		0.4	PEM
M38		0.08	PEM/PFO
M39*		1.88	PEM

Site Number	OFWAM Significance	Acres	USFWS Classification(s)
M40		16.51	RLP
		222.33	

Willamette River Basin Wetlands

Site Number	OFWAM Significance	Acres	USFWS Classification(s)
W1*		4.14	RLP
W2	Locally Significant Wetlands, Special Interest for Protection	0.90	PEM
W3		1.27	PFO/PEM/POW
W4	Locally Significant Wetlands	0.97	PFO/PEM
W5		5.6	POW/PFO/PEM
W6		5.63	PFO
W7*		36.02	POW
W8*		1.22	POW
W9		0.22	PEM
W11		0.67	PSS
W12	Locally Significant Wetlands	1.42	PFO
W10		2.25	PSS
W13		2.24	PFO
W14		0.97	PEM
W15		0.79	PFO
W16	Locally Significant Wetlands	1.46	PFO
W17		17.21	RLP
W18 A-C	Locally Significant Wetlands	131.99	PEM/PFO
**W-19	Locally Significant Wetlands	41.65	POW, PFO
W-20	Locally Significant Wetlands	3.73	PSS/PUB
W-21	Locally Significant Wetlands	.47	PSS
W-22	Locally Significant Wetlands	2.53	PFO
W-23	Locally Significant Wetlands	.87	PEM
W-24	Locally Significant Wetlands	.51	PFO
W-25		4.31	PFO
W-26		.86	PEM
		269.90	

Appendix C. Wildlife Habitat Assessment

Wildlife Habitat Inventory Methodology

Eugene-Springfield Metropolitan Natural Resources Study

Compiled by Esther Lev, 1988
Data forms updated by Eric Wold, City of Eugene, April 2001

This wildlife habitat inventory methodology can be divided into two steps:

- Site Selection
- Data Collection and Numerical Rating System

SITE SELECTION

The general location of all wetland/pond, riparian corridor and upland areas to be inventoried were mapped at a scale of 1"=2000. Several sources of information were used to determine site selection. These information sources include:

- The 1"=2000 scale vegetative cover type map from the Metropolitan Plan Natural Assets and Constraints Working Paper
- U.S. Fish and Wildlife Service National Wetlands Inventory
- Aerial photography
- Local experts in wildlife biology, hydrology and landscape architecture
- Storm drainage plans
- Other locally-generated natural resource-related documents
- Community input from neighborhood and special interest groups

The biologists who conducted the inventory briefly visited each site and further refined the map before actually applying the methodology.

DATA COLLECTION AND NUMERICAL RATING SYSTEM

The following wildlife habitat data collection and numerical rating system is a modification of one that was originally developed for use in the City of Beaverton in 1983 as part of their statewide planning Goal 5 update. It was designed by a technical advisory team consisting of staff from the City of Beaverton, Portland Audubon Society, EPA, Corps of Engineers, U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife and the Wetlands Conservancy. Since that time, it has been used in Washington County, Gresham and in the entire Portland metropolitan area, including the Willamette Greenway. It is currently being considered for use in Tualatin, Tigard and Lake Oswego.

Each time this methodology has been used, it has been slightly modified and refined to address the specific needs of local jurisdictions and DLCD. Considering the degree of detail that LCDC requires and time, money and state-of-the-art constraints, a broad spectrum of professional biologists agree that this methodology works the best, allowing for revisions and changes.

The following is a discussion of that methodology as it was applied in the Eugene-Springfield metropolitan area. The methodology involved identifying and evaluating parameters that make sites good or potentially good wildlife habitat areas. There are two parts to the methodology:

- A narrative description of the site
- A numerical rating of various wildlife habitat parameters

Narrative Description

A narrative description of the site, including weather, topography, vegetation, wildlife habitat function, human use and management potential, were completed at each site using a standard inventory form (see Figure 1).

Numerical Rating

The numerical rating system (Figure 2) reviewed each wetland, pond, river, creek, riparian area and upland in terms of its potential for wildlife. The system is based on the fact that all wildlife has three basic requirements for survival: food, water and cover.

Each site was evaluated in terms of relative quantity, quality, diversity and seasonality of the components that appear at the site. Also considered were the degree and permanence of physical and human disturbance, proximity to other water-related and upland areas, and unique features including wildlife, flora and rarity of habitat.

This rating system was meant to assess the relative values of water areas and upland areas. It was not intended to provide a comprehensive analysis of each site. Information derived from the narrative descriptions and rating sheets should be used in tandem with an emphasis placed on the narrative descriptions.

DISCUSSION OF THE RATING SHEET

The form is divided into three parts. The first presents general information about the site to aid in identification. Included here are the Unit No., Location, Sq. Ft., Score and Comments.

Unit No.	A space is provided for the observer to label each site with an individual identification Number.
Location	Space to briefly describe the site location
Sq. Ft.	The approximate square footage could be noted here. This was not used for this inventory.
Score:	The cumulative score after the rating sheet is filled out is noted here. The scoring is done while in the field, trying to rate as many sites as possible per day
Comments	This space is used for additional remarks on the reasoning behind specific numeric ratings or for potential of the site or rehabilitation, etc.

The second part consists of the water, food and cover values (referred to as components). Each of these components is further divided into a number of aspects:

Water

Four aspects of the water regime on a site were included on the rating form: Quantity and Seasonality, Quality, Proximity to Cover and Diversity. All of these factors play an important role in the site's significance to wildlife.

It is also important to note that the relative value of these aspects compared to the other components (food and cover) were higher. The total number of possible points from the water component was 30, while the highest totals for food and cover were 20 points each. The reason for this weighting of the relative value of the water component was that wetlands and riparian zones are of critical importance to all wildlife habitat species and the only place where some species can survive and reproduce. Therefore, it is possible that a site with water only and relatively few other components would rank higher than an upland site with the same food and cover values.

Seasonality: This aspect refers to the amount of water available on site and its seasonality. Seasonal water sources were given a value of 4; perennial water sources (available year-round) were given a value of 8 because year-round water supply is significantly more important to wildlife.

Quality: Stagnant water sources were given a value of 0, seasonally flushed a value of 3, and continually flushed a value of 6. It was initially desired to have some value included reflecting the quality of the water on the site. However, actual water quality analysis were not feasible. Therefore, an indirect measure of quality, "flushing", was selected. In actuality, even stagnant water has some wildlife habitat value, but it was decided to assign stagnant water a value of 0, as seasonally flushed or continually flushed water has higher value for wildlife and because the presence of stagnant water indicates the presence of other factors which often result in lower wildlife values.

Proximity to Cover: Wildlife will use water more if it is close to vegetative cover. This allows escape from predators and protection from weather extremes. The closer and more dense the cover, the more important the water source to many species. Dense cover immediately adjacent to a water source gave the site a value of 8, nearby cover a value of 4, and no cover a value of 0.

Diversity: A site with a mixture of wetland, stream and open pond or lake has higher wildlife value than a site with only one of these features. The ranking ranged from a low of 2 (one water source only) to 8 (three or more water sources present). Only five sites received a value of 8. The vast majority had no source or only one, the Willamette River.

Food

Food is a basic requirement for any organism. Wildlife species cannot survive in one area for any appreciable period of time without food. The greater the variety and quantity of food, the greater the potential for serving the needs of more wildlife species. The three aspects included under food are Variety, Quantity and Seasonality, and Proximity to Cover.

Variety: The variety of food on a site was rated from 8 (high) to 0 (low).

Quantity: This aspect measures the amount of food and its availability. Sites having large quantities of food available received a value of 8, and sites with little or no food available received a value of 0.

Seasonality: This aspect measures the year-round availability of food. Sites which provide food year-round received a value of 4, and those sites providing limited food seasonally received a value of 2.

Cover

The aspects of cover included here (structure, variety, nesting, escape and seasonality) attempt to describe the physical environment of the site from a number of perspectives that are important to wildlife.

Structural Diversity: What was looked for in this category was the vertical stratification of the vegetation on a site. That is, is there only one layer of vegetative cover (e.g., lawn or one layer of shrub, such as Himalayan blackberry) or are there two, three or more layers. The most diverse structural system in our area would be multi-layered, with a ground layer of herbaceous vegetation (grasses, wild flowers, etc.), a second layer consisting of shrubs (Himalayan blackberry, Snowberry, Oregon Grape, Sword Fern, etc.), perhaps another layer of taller plants (Red and Blue Elderberry, Indian plum, red Osier Dogwood), a short tree layer (Flowering Dogwood, Hazelnut, saplings of taller species), and finally the tall canopy layer (Douglas Fir, Western Hemlock, Big-Leaf Maple, Black Cottonwood, Oregon White Ash, Oregon White (Garry) Oak, etc.). The more layers present, the greater the surface area for feeding, traveling and breeding available to a wider diversity of wildlife species. Values range from 8 for high structural diversity to 0 for low or no structural diversity.

Variety: Within any one layer or when considering all layers, if structural diversity is high there will be more variety of cover. Variety of cover is important from cover, feeding and reproductive standpoints. The greater the variety of cover, the more important the habitat. For example, a forested wetland with a mixture of rushes, sedges, smartweed, spirea and willows will be a much more important wildlife habitat area than a wetland with a monoculture of reed canary-grass. Variety values ranged from 8 for high variety to 0 for no or low variety.

Seasonality: As with water and food, a habitat site will be less important to wildlife if that component is not present year-round. Regarding cover, this relates primarily to whether all of the vegetation is deciduous or evergreen. If there is some evergreen vegetation or if the deciduous vegetation retains some of its canopy, the site would receive a higher value. Vegetative cover available year-round received a value of 4, limited cover a value of 2, and seasonal coverage a value of 0.

The third part of the form includes values in addition to food, water and cover. The components examined include disturbance, interspersions and unique features:

Disturbance

Disturbance is examined from two perspectives – physical and human.

Physical: This category was used to assign a higher value to those sites with little disturbance and to reflect the fact that the removal or disturbance of physical components (food, water, cover) is detrimental to wildlife. However, it is also recognized that such a disturbance could be relatively short-lived (e.g., the placement of a sewerline down a stream channel) while others are long-term or permanent. An undisturbed site received a maximum value of 4, with those sites with temporary physical disturbances receiving a value around 2, and those areas disturbed permanently or long-term a value of 0.

Human: Human and human-related (domestic animal) disturbances can be very detrimental to wildlife. Even though an area is highly disturbed from a physical perspective, it may receive little human use. A site could theoretically receive a 0 for low human disturbance. The potential value ranges from 4 for low human disturbance to 0 for high human disturbance.

Interspersion

Habitats are important to one another in the sense that a number of different habitats adjacent to one another can provide an overall diversity of vegetative cover, food, and often water. Therefore, an isolated site surrounded by pavement, buildings, empty fields, etc., would receive a lower interspersion value than would be the case if the site were surrounded by other habitat types, such as wetlands (emergent, forested, shrub), upland forests, shrubbery areas or meadows. If the surrounding sites were similar in make-up or represented only one habitat type, the site would receive a lower interspersion value than one surrounded by a variety of habitat types. The interspersion ranged from 6 for high interspersion to 0 for low interspersion.

Unique Features

This component is intended to take into account other factors which might make the site unique to plants, animals or humans. Aspects included were wildlife, flora, scenic quality, rarity of habitat and educational potential.

Wildlife and Flora: If there was a particular species of plant or wildlife which was sensitive or unique in some way, then the site would receive a value ranging from 10 to 4, depending on how unique it was. For example, a site with Wapato growing on it would receive a 4 since Wapato has been virtually eliminated from along the Willamette River in Portland due to flood plain alteration and wetland destruction. A site with a heron rookery would receive a 4 for a similar reason.

Ranking the Sites

Each wetland/pond, riparian corridor and upland site received an overall value or score for wildlife habitat by adding up the points on the rating sheet.

Wildlife Habitat Assessment Scoring Sheet

Eugene-Springfield Metropolitan Natural Resources Study

Observer Name: _____ Date of Field Visit: _____

Site #: _____ Location: _____

Comments: _____

Component		Range of Values	Score	Comments
WATER	Seasonality	Seasonal 4 _____ Perennial 8		
	Quality	Stagnant Seasonally Flushed Continually Flushed 0 _____ 3 _____ 6		
	Proximity to cover	None Nearby Immediately Adjacent 0 _____ 4 _____ 8		
	Diversity (streams, ponds, wetlands)	One present Two present Three present 2 _____ 4 _____ 8		
FOOD	Variety	Low Medium High 0 _____ 4 _____ 8		
	Quantity	Low Limited Year Round 0 _____ 4 _____ 8		
	Seasonality	None Limited Year Round 0 _____ 4 _____ 8		
COVER	Structural Diversity	Low Medium High 0 _____ 4 _____ 8		
	Variety	Low Medium High 0 _____ 4 _____ 8		
	Seasonality	Low Medium High 0 _____ 2 _____ 4		
DISTUR- BANCE	Physical	High Medium Low 0 _____ 2 _____ 4		
	Human	High Medium Low 0 _____ 2 _____ 4		
UNIQUE FEATURES	Wildlife	Not Unique Somewhat Unique Very Unique 0 _____ 2 _____ 4		
	Flora	Not Unique Somewhat Unique Very Unique 0 _____ 2 _____ 4		

	Rarity of Habitat Type	Not Rare 0 _____ 2 _____ 4 Somewhat Rare Very Rare		
	Interspersion	Low 0 _____ 3 _____ 6 Medium High		

TOTAL SCORE: _____

Wildlife Habitat Assessment Narrative Sheet
Eugene-Springfield Metropolitan Natural Resources Study

Location: _____

Observer: _____

Date: _____

Weather

Precipitation (yes, no, type):

Wind:

Percent cloud cover:

Temperature:

Physical Parameters

General topography:

Degree and orientation of slope:

Water features (pond, lake, stream stagnant, etc.):

Percent of silt inundated by water:

Major structures, roads:

Vegetation

Description of vegetation types, including species list, communities, percent canopy closure (tree, shrub, herb), number and size of snags, seral stage, general health and vitality, percent open water/percent emergent vegetation at inundated areas:

Wildlife

Species observed (herps, fish, birds, mammals):

Species not observed but known to be present, and sources of information:

General description of habitat function (food sources, roosting, perching, nesting, etc.):

Human Use

List human uses and use by domestic animals, and proximity to residential area. Discuss compatibility and conflicts with natural resources and interspersions with other natural areas.

Management/Potential

A brief statement on enhancement, maintenance, or compatible uses and development:

Additional Comments:

Unique features, rare, threatened, or sensitive species:

Assumptions Used For Economic Analysis

- Vacant lands were determined using Assessor's Property Class numbers: 100, 190, 200, 300, 340, 400, 700, and 740. The Assessor's property class codes provide information about whether a parcel is developed or vacant. The Assessor's estimated valuation of parcels of land and the improvements on those parcels also provides information about whether a property is developed or vacant. If the value of improvements on a parcel of land is "0," the land is considered vacant.
- Redevelopable lands were determined using the Assessor's land and improvement values for developed property. If Assessor's valuation of an improvement on a parcel of land is worth less than 25% of the value of the land itself, the land is considered a likely candidate for future redevelopment.
- Underutilized land was computed by identifying existing single family homes located on lots that are ½ acre or larger. Leaving ¼ acre for the existing home, it is assumed that in the future, land in excess of that could be subdivided and additional residential units built. The figures above show total acreage within the impact area and the acreage of the parcels associated with the resource sites.
- Developed properties were determined using the Assessor's property class numbers: 101, 106, 109, 121, 201, 301, 341, 401, 409, and 781.
- Potential dwelling units were computed using the assumption that single family residential will build out at 5 units per gross acre, and multi-family will build out at 12 units per gross acre.
- The employees per acre ratios for commercial and industrial zoning districts were derived from the Springfield Commercial Lands Study (pg. B-4) that was adopted in 2000. These ratios were used to estimate the number of employees (jobs) that might be located within the acreage within protected resource sites and their respective impact areas.

Acknowledgements

The Springfield Natural Resources Study made extensive use of materials and analysis that was prepared by the City of Portland as part of its Healthy Portland Streams project that was published in 2001. In particular, background information describing riparian functions and research on the setbacks necessary to preserve riparian functions was included in this Study.

The Study also made extensive use of the analysis found in the “Medford Locally Significant Wetlands Conflicting Use and ESEE Analysis,” Revised Draft of October 31, 2003. The report was prepared for the City of Medford by Winterbrook Planning. The basic format of the ESEE analysis as well as the discussion of the generic ESEE impacts of development on resource areas was taken directly from the Medford study.

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